

**CONFLICT AND COASTAL AQUATIC SPORTS: A MANAGEMENT  
PERSPECTIVE**

by

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A thesis submitted to the University of Plymouth  
in partial fulfilment for the degree of

**DOCTOR OF PHILOSOPHY**

Department of Geographical Sciences  
Faculty of Science

In collaboration with  
Cornwall College

**September 2004**

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## Abstract

This comprehensive study of Coastal Aquatic Sports (CAS) has been undertaken because recorded evidence suggests that the growth of CAS is beginning to hinder the interconnectivity of dynamic coastal and estuarine systems. Integrated Coastal Zone Management (ICZM) and Sustainable Development were selected as the framework for the development of this research. One of the main CAS related areas of concern was first exposed from a pilot study which indicated site saturation is occurring, causing conflict and confliction. Furthermore, evidence suggested that CAS is evolving in isolation from terrestrial sport and social recreational management procedures.

Social change and government initiatives have caused an upsurge of participation in CAS. Contributing factors included the redistribution of wealth, new technologies, cultural change, accessibility and the '*sport for all*' initiative instigated by the Sports Councils in the 1970s. Further to this CAS economic drivers have become intensely operational and these are stimulating further growth. For instance, the coupling of 'outdoor sport and CAS' to tourism and the outdoor leisure market, as well as the attachment of CAS to the manufacturing and service industries (particularly the fashion industry) have all created the climate for the commercialisation of CAS. The work reported here demonstrates that economic developments are aggravating the sustainable progression of CAS development. For instance, economic drivers encourage cultural division and this impacts upon the social cohesions of CAS.

Because of the complexity that exists within CAS, this work examined both grass root and executive management structures that govern it. Evidence indicates that Government legislation and CAS related management initiatives, such as bylaw or self regulation, are inadequate for the current CAS. Compounding this is the emergence of newer technologies that are affecting CAS speeds and manoeuvrability. These developments are clearly out of step with the development of contemporary CAS management programmes and guides for good practice. This study demonstrates that one cause for this is a lack of marine and maritime expertise in CAS related government departments and the low priority given to CAS by local authority. Lack of marine expertise within the management

hierarchy has been further aggravated by the blurring of executive management roles and also by numerous barriers to free communication. For instance, the role of National Governing Bodies (NGB) is endorsed by central government to produce Sport Codes of Practice. This NGB role is frustrated because NGB are commercially driven, leading to a high probability that the associated economic drivers and potential internal competition (two NGB claiming responsibility over one CAS) will negatively impact upon the sustainable development of CAS management practices. This study therefore suggests that there has been little progress by central Government towards a clearly defined framework to underpin the sustainable development of CAS and that an overarching CAS/Marine Transport management structure with a clear mechanism for a transparent communication process is lacking.

Hence, the work reported here examines a number of solutions generated through systematic qualitative and quantitative data collection and analysis. In this study it is argued that the implementation of these solutions will contribute to the development of sustainable management practices for multi-use CAS and recreation. The solutions are represented by two distinctive models. The first is based on comparability matrices and recommendations for their implementation into grass-root CAS management structures. The second provides an executive management model that will act as a catalyst for the development of sustainable CAS management practices.



# List of Contents

Copyright Statement	i
Abstract	iii
List of Acronyms	xiv
List of Tables	xvii
List of Figures	xxi
List of Illustrations	xxiii
Acknowledgements	xxiv
Author's Declaration	xxv
<b>Chapter One:</b>	
<b>INTRODUCTION</b>	
1.1	Background to the Study 1
1.2	Aims and Objectives of the Study 2
1.3	Methodology 3
<b>Chapter Two:</b>	
<b>THE HUMAN VALUES ASSOCIATED WITH SPORT AND THE COASTLINE</b>	
2.0	Introduction 7
2.1	The Historical Overview 8
2.2	Leisure and Sport in Society 10
2.3	Psychology of Sport 13
2.3.1	Attitudes and Perceptions of Sport Participants 15
2.3.2	Sport as a Culture 17
2.4	Overview of Aquatic Sport on the Coastline 20
2.5	Identification of UK CAS 21
2.5.1	Sailing Craft (wind) 23
2.5.2	Powerboat (fuel) 25
2.5.3	Personal Water-Craft (PWC) (fuel) 27
2.5.4	Boardsailing or Windsurfboard (wind) 29
2.5.5	Wave-Surfing 30
2.5.5.1	Longboard Surfing (wave) 32
2.5.5.2	Shortboard Surfing (wave) 33
2.5.5.3	Bodyboard Surfing (wave) 33

2.5.6	Sub Aqua (human)	34
2.5.7	Sea-Canoe/Kayak (human)	35
2.5.8	Wave-Ski (human)	37
2.5.9	Sea Swimming (human)	38
2.6	Technical Developments of Coastal Aquatic Sports and the Current Study	38
2.7	Growth of CAS Over Two Decades	39
2.8	CAS as a Component of the Tourism Industry	41
2.8.1	Development of the Coastline for Tourism and Leisure	42
2.9	Impacts of CAS on the Coastline and Coastal Communities	43
2.9.1	Overview of the Tourism Industry	44
2.9.2	Tourism and Activity Holidays	46
2.9.3	Tourism in Cornwall	49
2.9.4	The Marine Industry and CAS	50
2.10	Summary	52
<b>Chapter Three:</b>		
<b>ISSUES AND MANAGEMENT ASSOCIATED WITH CAS</b>		
3.0	Introduction	55
3.1	Conflict of Interest	56
3.1.1	Incompatibility of Craft Types	57
3.1.2	Incompatibility of CAS Multi-locations	59
3.2	Impacts of Culture	60
3.3	Aggression	62
3.4	CAS and Issues of Overcrowding	64
3.5	Historical Overview of the UK Coastal Planning and Policy	66
3.6	Government, National and Local Statutory Agencies in Relation to CAS Management and Control Mechanisms	67
3.7	Central and Local Authority Powers	68
3.7.1	Town and Country Planning	69
3.7.2	The Sustainability of UK Coastal Management	69
3.7.3	Local Government Bylaw Control Mechanisms	73
3.7.4	Harbour Authorities and Bylaw	75
3.8	CAS Government Agency and Alternative Management Mechanisms	75
3.8.1	Maritime and Coastguard Agency	76

3.8.2	Royal National Lifeboat Institution	76
3.8.3	Sport England	77
3.8.4	National Governing Bodies	79
3.9	The Concept of Sustainable Development and Integrated Coastal Zone Management (ICZM)	80
3.9.1	Sustainable Development	82
3.10	History of Integrated Coastal Zone Management	82
3.10.1	The ICM and ICZM Concepts	82
3.10.2	The Interaction between ICZM and CAS	83
3.11	Discussions on the use of ICZM as a Tool for the Development of CAS Management Structures	84
3.12	Summary	85
<b>Chapter Four:</b>		
<b>METHODOLOGY</b>		
4.0	Introduction	89
4.1	Methodology	90
4.2	Design Stages	91
4.3	Stage One	92
4.3.1	Sub-Section One (1998 Pilot Study)	92
4.3.2	Sub-Section Two (1999 LA Data Collection)	96
4.3.2.1	Data Collection	98
4.4	The Aims and Objectives	101
4.5	Objectives and Measurable Items (Stage One)	103
4.5.1	Aim One: Objective One	103
4.5.2	Aim One: Objective Two	106
4.5.3	Aim One: Objective Three	109
4.5.4	Aim One: Objective Four	111
4.6	Objectives and Measurable Items (Stage Two)	113
4.6.1	Aim Two: Objective One	113
4.6.2	Aim Two: Objective Two	114
4.6.3	Aim: Two: Objective Three	114
4.6.4	Aim Two: Objective Four	115
4.7	Methodology, Design Instruments and Operational Definitions	116
4.7.1	Limitations and Questionnaire Management	118
4.7.2	Respondent Concepts and the Perceived Success of an Interview	119

4.7.3	Operationalisation of the Research Design and Definition of Terms	120
4.7.4	Question Design Instruments and Limitations	125
4.7.5	Question Order and the Use of Buffer Questions	126
4.7.5.1	Buffer Questions	128
4.7.6	Rating Scales	129
4.7.6.1	Likert Scaling	130
4.8	Identification of the Year 2000 Fieldwork Sample Sites	132
4.8.1	Method of Sampling	133
4.8.2	Multi-stage Sampling	133
4.8.3	Description of Cluster One	130
4.8.4	Description of Cluster Two	136
4.8.5	Description of Cluster Three	137
4.8.6	The South West Peninsula as the Focus Study Area	138
4.8.7	Newquay	141
4.8.8	St Agnes	142
4.8.9	Marazion near Penzance	144
4.8.10	Plymouth and Falmouth	145
4.8.11	Identification of the Year 2000 Field Work Population and Sample	148
4.8.12	Identification of the 2002 Sample: Governance Interviewees	150
4.9	The Selection and Use of Statistical Tests for Quantitative Data Analysis	151
4.9.1	Data Coding	151
4.9.2	Descriptive Statistics and Tests of Significance	152
4.10	Qualitative Data Analysis	153
4.10.1	Methodology for the Qualitative Data Analyses	154
4.11	Summary	157
<b>Chapter Five:</b>		
<b>THE FIELD SITUATION. DATA ANALYSIS</b>		
5.0	Introduction	159
5.1	Results of Sub-Section One: Pilot Study Year 1998	159
5.1.1	Risks Associated with CAS	161
5.1.2	Conclusion	162
5.2	Results of Sub-Section Two: LA Data Collection 1999	163
5.2.1	Carrick District Council	164
5.2.1.1	Gyllyngvase Beach Falmouth	164
5.2.1.2	Holywell Bay	163

5.2.1.3	Perranporth Beach and Perranporth Sands	166
5.2.1.4	St Agnes	167
5.2.2	Restormel District Council	168
5.2.2.1	North Fistril	169
5.2.2.2	South Fistril	170
5.2.3	Penwith Local Authority	171
5.2.3.1	Marazion	171
5.2.3.2	Porthminster (St Ives)	173
5.3	Results of Stage One: Sub Section Three (2000)	174
5.3.1	Sample Overview	175
5.4	Results relating to Stage One: Sub Section Three - Objective One	178
5.4.1	Respondent Profile	178
5.4.2	Description of the Perceptions of CAS Respondents to Ability	183
5.4.3	Summary of Participant Profile	187
5.5	Results Relating to Stage One: Sub Section Three - Objective Two	188
5.5.1	Description of Quality from the Perspective of the CAS Participant	188
5.6	Results relating to Stage One: Sub Section Three - Objective Three	195
5.6.1	Description of Risk from the Perspective of the CAS Participant	195
5.7	Results relating to Stage One: Sub Section Three - Objective Four	205
5.7.1	Description of CAS Activity Knowledge from the Perspective of the CAS Participant	205
5.7.2	National Governing Body (NGB) Membership	210
5.7.3	Respondents' Knowledge of the Management Structures that are Associated with CAS Activity	215
5.8	Summary	219

## **Chapter Six:**

### **ISSUES OF COASTAL LOADING, RISK AND SAFETY**

6.0	Introduction	228
6.1	Results from Year 2000 Study: CAS Participants Perceptions of Coastal Loading	232
6.1.1	CAS General Population Tolerance Levels for Swimmers	232
6.1.2	CAS General Population Tolerance Levels for Bodyboard	232
6.1.3	CAS General Population Tolerance Levels for Shortboard	234
6.1.4	CAS General Population Tolerance Levels for Longboard	235
6.1.5	CAS General Population Tolerance Levels for Windsurfboard	236
6.1.6	CAS General Population Tolerance Levels for Sailboat	237

6.1.7	CAS General Population Tolerance Levels for Jet-Ski / Personal Watercraft	239
6.1.8	CAS General Population Tolerance Levels for Powerboat	241
6.1.9	CAS General Population Tolerance Levels for Sub-Aqua	242
6.1.10	CAS General Population Tolerance Levels for Sea-Angler	244
6.1.11	CAS General Population Tolerance Levels for Canoe	245
6.1.12	Discussion	246
6.2	Compatibility Matrices	247
6.3	Summary	251
6.3.1	Human Powered Activities	251
6.3.2	Wave Powered Activities	253
6.3.3	Wind Powered Activities	254
6.3.4	Fuel Powered Activities	255

## **Chapter Seven:**

### **CAS GOVERNANCE**

7.0	Introduction	258
7.1	Aim and Objectives of CAS Governance Field work	259
7.1.1	Stage Two: Objective One-Identification of the Marine and Maritime Coastal Stakeholders that have an Interest in CAS	260
7.2.	Stage Two: Objective Two-The Responsibilities of Central Government, their Attached Agencies, and External Organisations	262
7.2.1	The Office of the Deputy Prime Minister (ODPM) and the Regional Co-ordination Unit (RCU) and Government Office Network	262
7.3	Mediators for CAS	265
7.3.1	Sport England	266
7.3.2	Maritime and Coastguard Agency	267
7.4	National Governing Bodies	269
7.4.1	The Status of NGB	270
7.4.2	NGB and Communication Links	271
7.4.3	NGB and Funding Issues	272
7.4.4	The Effect of NGB Life-Spans	273
7.4.5	Impact of Overlapping SE and UK Sport Responsibilities on NGB	274
7.5	Sport Codes of Practise (SCP)	275
7.5.1	Dissemination of SCP	275
7.5.2	The Official Status of SCP	276

7.5.3	The Effectiveness of SCP Casual Interpretation	277
7.6	Local Authorities	278
7.6.1	Local Authorities and CAS Management	279
7.6.2	Local Authorities Internal CAS Expertise	280
7.7	Stage Two: Objective Three-Coastal Loading and Management Initiatives	282
7.7.1	CAS Stakeholders' Understanding of Coastal Loading	284
7.7.2	CAS Management and Initiatives	285
7.7.2.1	Self-Regulation	285
7.7.2.2	CAS Insurance	286
7.7.2.3	Marine Licence	287
7.7.2.4	Zoning Policies	288
7.7.2.5	Education and Training	288
7.8	Stage Two: Objective Four-Marine Stakeholders and the Regulation, Control Mechanisms and Facilities that Govern Coastal Sports	290
7.8.1	The Bylaw System	290
7.8.2	Complexity of Marine and Maritime Policy	291
7.8.3	Integrated Coastal Zone Management	292
7.8.4	Issues of a Single Central Marine and Maritime Body	293
7.8.5	Cost and Benefit; the Economic Considerations	294
7.8.6	CAS Core Direction	295
7.9	Summary	297
7.9.1	Identification of the CAS Management Organisational Barriers	297
7.10	Stakeholder Recommendations for Sustainable CAS Management	301
7.10.1	Development of Marine and Maritime Expertise	301
7.10.2	Clear Definition of Marine and Maritime Organisations Roles and Responsibilities	302
7.10.3	Development of Streamlined CAS Communication System	302
7.10.4	Development of Sustainable CAS Management	303

## **Chapter Eight:**

### **CAS GOVERNANCE ORGANISATIONAL MODEL**

8.0	Introduction	304
8.1	The Role of the Office of the Deputy Prime Minister and the Regional Co-ordination Unit (RCU) and Government Office Network	308
8.2	Department for Transport	309
8.3	Department of Culture Media and Sport	315

8.4	Department for the Environment, Food and Rural Affairs	317
8.5	Department for Education and Skills	319
8.7	The CAS Governance Organisation Model	322
8.8	Summary	334
<b>Chapter Nine</b>		
<b>CONCLUSIONS AND RECOMMENDATIONS</b>		
9.1	Reflections on the Previous Discussed CAS Issues	336
9.2	Conclusions	343
9.3	Recommendations	350
9.3.1	Further Recommendations	350
<b>REFERENCES</b>		352
Appendix One		367
Appendix Two		372
Appendix Three		476
Appendix Four		413



## List of Acronyms

AALA	Adventure Activities Licensing Authority
BMIF	British Marine Industries Federation.
BSA	British Surfing Association
BSAC	Beach Safety Advisory Committee
BSAC	British Sub Aqua Club
BSO	Beach Safety Officers
BWSF	British Water Ski Federation.
BCU	British Canoe Union
BTG	Britain Tidy Group
CAS	Coastal Aquatic Sport
CZM	Coastal Zone Management
DCMS	Department of Culture, Media and Sport
DETR	Department of the Environment Transport and Regions.
DEFRA	Department of the Environment Fisheries and Rural Affairs
DfES	Department for Education and Skills
DfT	Department for Transport

DoE	Department of the Environment
DoT	Department of Transport
DTI	Department of Trade and Industry
EOM.	Executive Organisational Model
EOS	Executive Organisational Structure
E.S.A	English Surfing Association
E.S.F	English Surfing Federation
F.W	Field Work
GO	Government Office
GOM	Governance Organisation Model
G.P	Guiding Principles
HO	Home Office
HMC	Her Majesty's Coastguard Service
ICZM	Integrated Coastal Zone Management
ILO	International Labour Organisation
IMO	International Maritime Organisation
LA	Local Authorities
LoS	Law of the Sea

LPA	Local Planning Authorities
MAFF	Ministry of Agriculture, Fisheries and Food
MCA	Maritime Coastguard Agency
MCS	Marine Conservation Society
MSZ	Marine Sports Zone
MTS	Marine Transport System
NARS	National Aquatic Rescue Standards.
NBSC	National Beach Safety Council
NG B	National Governing Body
NGO	Non Governmental Organisations
NSSD	National Strategy for Sustainable Development
NSSF	National Surf Safety Forum
NSBC	National Safety Beach Council
ODPM	Office of the Deputy Prime Minister
PADI	Professional Association of Dive Instructors
PPG	Planning Policy Guidance
PPO	Planning Policy Objectives
PWC	Personal Water Craft

RCU	Regional Co-ordination Unit
RLSS	Royal Life Saving Society
RNLI	Royal National Lifeboat Institution
RSB	Regional Sport Board
RYA	Royal Yachting Association
SAS	Surfers Against Sewage
SCP	Sport Code of Practice
SD	Sustainable Development
SE	Sport England
SLSA	Surf Life Saving Association
SPSS	Statistical Package for Social Science
SPZ	Simplified Planning Zones
SMP	Shoreline Management Plan
SW	South West
UK	United Kingdom
UNCED	United Nations Conference on Environment and Development
WWF	World Wide Fund for Nature

## List of Tables

<b>Table</b>	<b>Title</b>	<b>Page</b>
2.1	UK Landward and Seaward Coastal Zone Pressures,	8
2.2a	Aquatic Sports Marazion, August 1976 & 1999	39
2.2b	Aquatic Sports Perranporth, August 1976 & 1999	39
2.3	The Four Perceived Negative Tourism Influences. McKercher, (1993)	46
2.4	The Domestic Market, by Type of Activity Holiday, 1997. Mintel	47
2.5	Seven of the Events Held in the World Watersports Festival 1998 and their Associated Values. (Exeter University, 1999)	48
2.6	Economic Impact of Tourism in Cornwall Report, (WCTB, 1998)	50
3.1	Relevant Current Bylaws. (DoE, 1996b)	73
5.1	Dates and Locations of the Year 2000 Fieldwork	174
5.2	Distribution of CAS Type and Frequency of Completed Questionnaires by CAS Respondents	175
5.3	Age Range of Sample	176
5.4	CAS Age range Wind Powered – Wave Powered	
5.5	CAS Age Range-Location	
5.6	Gender Grouping of Sample	178
5.7	CAS Gender – Preference of Activity Type	
5.8	Visitor – Resident Respondent Grouping	179
5.9	Visitor and Local Groups in Relation to Ability	
5.10	Car Ownership Respondent Grouping	179
5.11	Respondent Perception of Self – Ability	180
5.12	CAS Participant Age Group and Perception of Ability	
5.13	Respondent Perceptions of Escape as a Desired Quality of their CAS	185
5.14	Local and Visitor Perceptions of Escape	
5.15	Respondent Perceptions of ‘Others’ as a Desired Quality of their CAS	185
5.16	Local and Visitor Perceptions of Others	
5.17	Respondent Perceptions of Competition as a Desired Quality of their CAS	186
5.18	Respondent Perceptions of Exercise as a Desired Quality of their CAS	186
5.19	Respondent Perceptions of Culture as a Desired Quality of their CAS	187
5.20	Respondent Perceptions of Culture in Relation to Ability	
5.21	Respondent Perceptions of Personal as a Desired Quality of their CAS	187
5.22	Importance Factors Affecting CAS Participation	188
5.23	Respondent Perception of Attitude in Relation to Interview Location	
5.24	Respondent Perception of Ability in Relation to Interview Location	
5.25	Respondent Perception of Craft Type in Relation to Ability	
5.26	Respondent Perceptions of Risk Factors	190
5.27	Participant Perception of Risk in Relation to Ability, Attitude and Crowding -Location	
5.28	CAS Human/Wind Participant Perceptions of Risk in Relation to Ability, Attitude and Crowding	
5.29	CAS Fuel/Wind Participant Perceptions of Risk in Relation to Ability, Attitude and Crowding	
5.30	CAS Participants in Relation to Incidences of Collision	
5.31	Incidents of Collision Caused by Participants by Power Source	
5.32	Perception of Increased Risk when Sharing Water Space.	194
5.33	Male and Female CAS Participants Perception of Risk	
5.34	Respondent Perception of Risk in Relation to Sharing Water Space	
5.35	Respondent Encounters with Hostility	196
5.36	Respondent Encounters with Verbal Hostility in Relation to Ability	

5.37	Respondent Encounters with Gesticular Hostility in Relation to Ability	
5.38	Respondent Encounters with Physical Hostility in Relation to Ability	
5.39	Respondent Encounters with Verbal Hostility in Relation to Collision	
5.40	Respondent Encounters with Gesticular Hostility in Relation to Collision	
5.41	Respondents' Knowledge of Sporting Codes of Practice (SCP)	197
5.42	Respondent Perception of SCP Availability at Location	
5.43	Respondent Perception of SCP Availability and Encounter with Verbal Hostility	
5.44	Respondent Perception of SCP Availability and Encounter with Gesticular Hostility	
5.45	Respondent Affiliation to NGB and Other Organisations	198
5.46	Respondents Affiliation with NGB and Other Organisations	200
5.47	Respondent NGB Membership in Relation to Location	
5.48	Craft Type in Relation to Location	
5.49	Respondent NGB Membership in Relation to Craft Type	
5.50	Respondent NGB Membership in Relation to Ability	
5.51	Respondent NGB Membership in Relation to Age Group	
5.52	Respondent NGB Membership in Relation to CAS Experience	
5.53	Respondent NGB Membership in Relation to Perception of Quality	
5.54	Respondents Perceptions to Accessibility and Effectiveness of SCP	201
5.55	Respondents Perceptions to the Accessibility of SCP in Relation to Craft Type	
5.56	Respondents Perceptions to the Accessibility of SCP in Relation to Location	
5.57	Respondents Perceptions to the Effectiveness of SCP in Relation to Location	
5.58	Respondents' Awareness and Perception of the Effectiveness of CAS Management Structures	203
5.59	Respondent Identification of in situ Regulation and Control Mechanisms	206
5.60	Respondent Awareness of Management Mechanisms in Relation to Ability	
5.61	Respondent Awareness of Management Mechanisms in Relation to Craft Type	
5.62	Respondent Awareness of Management Mechanisms in Relation to Age Group	
5.63	Respondent Awareness of Management Mechanisms in Relation to Visitor Status	
6.1	CAS Craft Power Source - Location of Interview	213
6.2	CAS Participant Self - Perceived Ability and the Occurrence of Verbal Hostility	214
6.3	CAS Participant Self - Perceived Ability and the Occurrence of Gesticulate Hostility	215
6.4	CAS Participant Self - Perceived Ability and the Occurrence of Physical Hostility	216
6.5	CAS Participant Perception of a Reduction in the Quality of Experience and Their Perception of Risk when Sharing the Water Environment	218
6.6	Importance Scores of Other People's Craft - CAS Participant Beginner and Intermediate Abilities	220
6.7	CAS Participants from the Locations of Falmouth and Marazion, Penwith and the Importance of Other Peoples' Ability.	221
6.8	Accessibility of SCP - Location	223
6.9	Accessibility of SCP - Verbal Hostility	224
6.10	Accessibility of SCP - Hostile Gestures	225

6.11	CAS Participant NGB Membership – Location of Interview	227
6.12	CAS Participant NGB Membership – Craft Power Source	228
6.13	CAS Participant NGB Membership – Participant Ability	230
6.14	CAS Participant Perceived Level of Ability – Sport Organisation Membership	231
6.15	CAS Participant Perceived Reduction of ‘Quality Of Experience’ and NGB Membership	232
6.16	CAS Participant Awareness of Government Coastal Policies and Management Structures – CAS Participant Level Of Ability	234
6.17	CAS Participant Awareness of Government Coastal Policies and Management Structures – CAS Craft Power Source	235
6.18	CAS Participant Awareness of Government Coastal Policies and Management Structures – CAS Participant Age Group	236
6.19	CAS Resident – Visitor Participant Awareness of Government Coastal Policies and Management Structures	237
6.20	The Average Desirable Number of Beginner, Intermediate and Experienced Swimmers that are Acceptable by CAS Human or Wind Powered Participants	240
6.21	The Average Desirable Number of Beginner, Intermediate and Experienced Swimmers that are Acceptable by CAS Human or Fuel Powered Participants	241
6.22	Total Mean Tolerance Levels for CAS Swim Participants	242
6.23	The Average Desirable Number of Beginner, Intermediate and Experienced Bodyboard Participants Acceptable by CAS Human or Wind Powered Participants	243
6.24	The Average Desirable Number of Beginner, Intermediate and Experienced Bodyboard Participants Acceptable by CAS Human or Fuel-Powered Participants	244
6.25	The Average Desirable Number of Beginner; Intermediate and Experienced Bodyboard Participants Acceptable by CAS Wave or Wind Powered Participants	245
6.26	The Average Desirable Number of Beginner, Intermediate and Experienced Bodyboard Participants Acceptable by CAS Wave or Fuel Powered Participants	246
6.27	The Average Desirable Number of Beginner, Intermediate and Experienced Bodyboard Participants Acceptable by CAS Wind or Fuel Powered Participants	247
6.28	Total Mean Tolerance Levels for CAS Bodyboard Participants	248
6.29	The Average Desirable Number of Beginner, Intermediate and Experienced Shortboard CAS Participants Acceptable by CAS Human or Wave Powered Participants	249
6.30	The Average Desirable Number of Beginner, Intermediate and Experienced Shortboard CAS Participants Acceptable by CAS Human or Fuel Powered Participants	250
6.31	The Average Desirable Number of Beginner, Intermediate and Experienced Shortboard CAS Participants Acceptable by CAS Wave and Wind Powered Participants	251
6.32	Total Mean Tolerance Levels for CAS Shortboard Participants	252
6.33	The Average Desirable Number of Beginner, Intermediate and Experienced Longboard CAS Participants Acceptable by CAS Human and Wave Powered Participants	253
6.34	The Average Desirable Number of Beginner, Intermediate and Experienced Longboard CAS Participants Acceptable by CAS Wave and Wind Powered Participants	254

6.35	Total Mean Tolerance Levels for CAS Longboard Participants	255
6.36	The Average Desirable Number of Beginner, Intermediate and Experienced Windsurf CAS Participants Acceptable by CAS Human and Wind-Powered Participants	256
6.37	The Average Desirable Number of Beginner, Intermediate and Experienced Windsurf CAS Participants Acceptable by CAS Wave and Wind-Powered Participants	257
6.38	The Average Desirable Number of Beginner, Intermediate and Experienced Windsurf CAS Participants Acceptable by CAS Wave and Wind-Powered Participants	258
6.39	Total Mean Tolerance Levels for CAS Windsurfboard Participants	259
6.40	The Average Desirable Number of Beginner, Intermediate and Experienced Sailing CAS Participants Acceptable by CAS Human and Wind-Powered Participants	260
6.41	The Average Desirable Number of Experienced Sailing CAS Participants Acceptable by CAS Human and Fuel-Powered Participants	261
6.42	The Average Desirable Number of Beginner, Intermediate and Experienced Sailing CAS Participants Acceptable by CAS Wave and Wind-Powered Participants	262
6.43	The Average Desirable Number of Beginner, Intermediate and Experienced Sailing CAS Participants Acceptable by CAS Wave and Fuel-Powered Participants.	263
6.44	Total Mean Tolerance Levels for CAS Sailboat Participants	264
6.45	The Average Desirable Number of Beginner, Intermediate and Experienced Jet-Ski CAS Participants Acceptable by CAS Human and Fuel-Powered Participants	265
6.46	The Average Desirable Number of Beginner, Intermediate and Experienced Jet-Ski CAS Participants Acceptable by CAS Wind and Fuel-Powered Participants	266
6.47	Total Mean Tolerance Levels for CAS Jet –ski (PWC) Participants	267
6.48	The Average Desirable Number of Beginner, Intermediate and Experienced Powerboat CAS Participants Acceptable by CAS Wave and Wind-Powered Participants	268
6.49	The Average Desirable Number of Beginner, Intermediate and Experienced Powerboat CAS Participants Acceptable by CAS Wave and Fuel-Powered Participants	269
6.50	The Average Desirable Number of Beginner, Intermediate and Experienced Powerboat CAS Participants Acceptable by CAS Wind and Fuel-Powered Participants	270
6.51	Total Mean Tolerance Levels for CAS Powerboat Participants	271
6.52	The Average Desirable Number of Beginner, Intermediate and Experienced Sub-Aqua CAS Participants Acceptable by CAS Human and Wave-Powered Participants	272
6.53	The Average Desirable Number of Beginner, Intermediate and Experienced Sub-Aqua CAS Participants Acceptable by CAS Human and Wind-Powered Participants	273
6.54	The Average Desirable Number of Beginner, Intermediate and Experienced Sub-Aqua CAS Participants Acceptable by CAS Human and Fuel Powered Participants	274
6.55	The Average Desirable Number of Beginner, Intermediate and Experienced Sub-Aqua CAS Participants Acceptable y CAS Wind and Fuel Powered Participants	275
6.56	Total Mean Tolerance Levels for CAS Sub-Aqua Participants	276



6.57	The Average Desirable Number of Beginner, Intermediate and Experienced Angler CAS Participants Acceptable by CAS Human and Wave Powered Participants	277
6.58	The Average Desirable Number of Beginner, Intermediate and Experienced Angler CAS Participants Acceptable by CAS Human and Wind Powered Participants	278
6.59	The Average Desirable Number of Beginner, Intermediate and Experienced Angler CAS Participants Acceptable by CAS Human and Fuel Powered Participants	279
6.60	Total Mean Tolerance Levels for CAS Sea-Angler Participants	280
6.61	Total Mean Tolerance Levels for CAS Canoe Participants	281
7.1	The 2002 Stakeholders and their Affiliations	300
8.1	The Organisational Barriers and Issues that Affect the Sustainable Management of CAS	306
8.2	Barriers and Issues Associated with Grass Roots Management Initiatives that Affect the Sustainable Management of CAS	306
8.3	Maritime and Coastguard Agency (2003) : Press Notice NO 036_03	312
8.4	Economic Value and Costs Associated with Marine Accident and Rescue	312
9.1	CAS Coastal Loading Compatibility Matrice for Coastal Managers	345

## List of Figures

Figure No	Title	Page
2.1	Maslow's Hierarchy of Needs, (1954) Woods (1998:2)	12
2.2	Total Industry Turnover: 1993-1998 (BMIF, 1998)	25
2.3	Estimated Number of PWC in Use in the UK from 1986-1998 (BMIF, 1999)	27
2.4	Total Participant Number of Surf Lessons During 1996 – 1999, (BSA, 1999)	32
3.1	Attainable Speeds of Individual CAS: Pilot Study (1998) Chapter 4 of this Thesis	57
3.2	The Three Departments of Government relevant to CAS	66
4.1	Stages of designing and carrying out a study, including iterations for modifications and improvements during planning (Black, 1999)	89
4.2	South West Peninsula: Location of Selected Sample Sites	150
4.3	Identification of the Newquay Sample Sites	152
4.4	Location of the St Agnes Sample Site	156
4.5	Overview of Plymouth Estuary and Port	158
4.6	Overview of Falmouth Estuary and Port	159
4.7	Identification of the Marazion Sample Site	160
5.1	The Numbers of CAS Participant Response by Power Source	176
5.2	Age Range of Sample in Relation to Power Source	177
5.3	Respondents' Self-Ability Perception in Relation to Power Source	181
5.4	Periods of Instruction Received by CAS Respondents by Power Category	184
5.5	Respondent Perceived Reduction of Sporting Experience Associated with Sharing Water-Space in Terms of the Power Category	189
5.6	Respondents External Collisions (Measured by Power Source)	193
5.7	Respondents Accidental Collisions (Measured by Power Source)	193
5.8	Respondents Perceptions of the Reduction of Sporting Experience, due to Sharing Water-Space, by Ability	195
5.9	Respondents Perception to Increased Risk Sporting Experience, due to Sharing Water-Space, by Ability	195
5.10	Respondent Encounters with Verbal Hostility, in terms of Participant CAS by Power Category	196
5.11	Respondent Affiliation with NGB by Powered	199
5.12	Respondent Affiliation with NGB by Ability	199
5.13	Respondents Perception of Accessibility of SCP by Power type	202
5.14	Respondents Perception of Effectiveness of SCP by Power type	202
5.15	Respondents Awareness of Current CAS Regulation and Control Structures	204
5.16	Respondent Perception of the Effectiveness of Current Regulation Control Mechanisms as a Function of Power Category	205
5.17	Respondent Perception of the Effectiveness of Current Regulation Control Mechanisms as a Function of Ability Levels	205
7.1	The Three CAS Related Departments of Central Government	302
7.2	Government Agencies and their Specific Attachment to the CAS Key Departments of Central Government	304
7.3	CAS linked Organisational Communication Exchange	308

7.4	The Current CAS Management Information System Identified by this Study	319
8.1	The Organisational Barriers and Issues that Effect the Sustainable Management of CAS	341
8.2	Time Dynamics of a Continuous Governance Organisation Model (GOM)	333
8.3	Flow Path of a Sustainable CAS Management Process	335
9.1	Time Dynamics of a Continuous Governance Organisation Model (GOM)	349

## List of Illustrations

Illustration	Title	Page
4.1	Falmouth Docks 2002	149
4.2	Plymouth Water Face Facilities 2002	151
4.3	Fistral beach Newquay: Cornwall Summer 2002	152
4.4	Falmouth Marina 2002	155
4.5	Marazion Windsurfing 2001	156
4.6	Fistral Beach Surfing School 2003	156

## ACKNOWLEDGEMENTS

Especially for my children, Logan, Storm and Alph:a

This research was motivated from witnessing when working as a surf lifeguard a number of near misses involving fuel driven CAS and swimmers. It is said that the scientist within each of us will always question the 'how and why' and this is certainly true in my case however, I was little prepared for the totality of the mission to which I had set myself.

All missions need guidance and I was very fortunate to cross the path of Dr Leo Salter, Director of Research of Cornwall College who identified with my purpose and assisted me to 'carry my cross' as so to speak to the level necessary. Through Leo I found both a friend and a great source of wisdom which guided my personal development and confidence to drive forward the research. I hope I have the tenacity to follow in such great footsteps. My gratitude is also extended to Mr Peter Sims and Dr Allan Jones of the Geographical Science Department of the University of Plymouth who also took me into the fold and with great patience and encouragement have systematically pressed forward my research and indeed the arrangements of my thought processes, I am very fortunate to have been able to share my ideas, concerns and aspirations with such incredibly astute individuals.

I am now a different person to the one who witnessed the CAS near misses, some of my questions are answered but, those questions have developed deeper questions and a desire to continue within the realms of research, a rewarding and yet frustrating destiny methinks.

## MODEL DECLARATION

### AUTHOR'S DECLARATION

At no time during the registration for the degree of Doctor of Philosophy has the author been registered for any other University award.


This study was financed with the aid of studentship from the University of Plymouth and Cornwall College.

A programme of advanced study was undertaken, which included a final year honours course in Leisure Management, and a social research post-graduate course.

Relevant scientific seminars and conferences were regularly attended at which work was presented: external institutions were also visited for consultation purposes.

Presentation and Conferences Attended

External Contacts:

Signed.....

Date.....3.12.04

# **CHAPTER ONE: INTRODUCTION**

## **1.1 Background to the Study**

Multi-functional coastal aquatic sport (CAS) systems are rapidly becoming problematic. This is because they are diverse, complex and contribute to environmental and physical problems in the coastal zone. The growth of participation numbers in CAS has further exacerbated the situation. Increased sports participation is part of government strategy; sports participation is generally perceived as being beneficial to society and the nation and should therefore be catered for and encouraged. Most importantly the work reported in this thesis has demonstrated that it needs to be effectively managed.

A report of the UK Government's Inter-Departmental Working Party, detailed by the DETR, Department of the Environment Transport & Regions, (1998)<sup>1</sup> acknowledged the problems associated with recreation on the coast and noted that there are few comparative statistics available from which to assess the scale of the problem. The 1998 launch of the Maritime and Coastguard Agency (MCA) also highlighted the fact that there are specific risks associated with the ocean and coastal environment. There are a large number of organisations involved in coastal issues and these have evolved around coastal planning and policy. Hence, for CAS management an extensive mesh of intricacy exists that is not conducive to clear effective management. Furthermore, because of the complications associated with inter-organisational communications the Environment Committee (1992) stated that these types of complications have constrained the development of coastal planning and management.

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<sup>1</sup> Now known as Department for Transport (DfT) and Department for the Environment, Food, and Rural Affairs (DEFRA).

This study has identified three specific themes that CAS issues generate from, these are (i) the 'field' situation; (ii) governance; and (iii) relationships to coastal management. These themes have been used to structure the work reported here.

## **1.2 Aims and Objectives of the Study**

This study has investigated the impacts of CAS in the South-West Region of the UK. There are two aims to the research linked to the themes discussed above:

Aim One (i): To identify the compatibility levels for the coexistence of certain sports and the carrying capacity for these activities that can be attached to locations in the coastal environment. This model would then act as an aid for effective water-space management for multi-use aquatic sports and recreation and inform future coastal management and planning.

Aim Two (ii): To develop an integrated management model that would identify and define a clear 'executive' CAS organisational management structure. This 'executive' organisation model will underpin the development of individual CAS management structures.

There are two stages to this research. The first stage examined CAS from the participant perspective and the second examined the year 2002 CAS governance structures.

### **Stage One (Theme One)**

The four research objectives for the examination of the CAS participant are:

1. To determine if there is a unique character profile attached to the participants in CAS and whether that profile differs for the independent activities
2. To investigate if there is a difference in the attitudes and perceptions of individual CAS participants in relation to 'quality of experience'

3. To examine the differences in the attitude and perceptions of individual CAS participants to issues of coastal loading, risk and safety
4. To accumulate information in relation to the variability of understanding by CAS participants of issues relating to policies and management programs that regulate CAS

### Stage Two (Theme Two)

The four research objectives that will identify if organisational barriers exist within the cascade of bodies that have an interest in CAS are:

1. Identification of the marine and maritime coastal stakeholders that have an interest in CAS
2. An assessment of the responsibilities of central government and their attached agencies, and external organisations
3. An assessment of the awareness of marine stakeholders of current government management initiatives and structures
4. An assessment of the awareness of marine stakeholders of the regulation, control mechanisms and facilities that currently govern coastal sports

It was perceived that by examining both ends of the CAS spectrum, i.e. the grass-root or 'field' and the overarching 'governance' perspectives the positive/ negative relationships could/or could not be identified. The results could then provide both coastal managers at grass root and also representatives from 'governance' related organisations with robust information for the sustainable development of CAS.

## 1.3 Methodology

The research included a review of literature relating to coastal water-based activities and focused particularly on their current organisational and legislative frameworks. The technical developments that can be ascribed to aquatic sports required a classification procedure such as speed or mode of propulsion for all CAS activities because some CAS craft differences require specific fields for analysis. Pilot studies carried out in 1998 and



1999 provided a range of essential primary data that related to theme (i). Data on the number and type of water users gathered from a photographed 'flyover' of the Cornish coastline in 1976 by Cornwall County Council was compared with information gathered from a number of Local Authorities' Lifeguard Stations in 1999. This allowed an estimate to be made of CAS growth over the past two decades. The information obtained from these data identified current trends, predicted growth, and categorised the economic contribution of aquatic sports. The results also indicated that studies of activity and space pressure were indeed necessary.

The research examines links between social impacts and the effect of risk upon CAS participants. The study employed a multi-stage cluster sample method (De Vaus, 1996) that assisted in the identification of ideal sample sites. These included diverse locations such as Plymouth, Falmouth, Newquay, St Agnes and Penzance. These sites were selected because they embody different CAS; these included sailing, powerboating, windsurfing, surfing, bodyboarding, swimming, sub-aqua and angling.

A mixed method methodology that included both a qualitative and quantitative survey was selected as the optimum tool for the main data collection. This involved a purpose-designed questionnaire that was administered to CAS participants on a face-to-face basis and provided the raw data for a statistical analysis that enabled the links between facts, attitudes and behaviours to be assessed (Howitt and Cramer, 2001). The data from the purpose-designed questionnaire provided a clear indication of the issues that CAS participants perceived as affecting the way that they interacted with the overall CAS landscape. This allowed for the conclusions linked to the first stage of the study to be developed, by providing specific links to the second 'governance' stage of the study.

Stage Two (Theme, (ii)) of the study used a semi-structured qualitative interview administered to stakeholder representatives from Government Departments, Government Agencies, Local Authorities, Charitable Institutions and National Governing Bodies. The information obtained was used to expand on data collected from Stage One of the study. This is because CAS demands the existence of management structures, which need clear definition in order to function correctly. Hence, marine stakeholder representation was critical to this study because it provided an instrument to examine the organisation systems that are associated with CAS management and the way they have impacted upon the development of CAS. The conclusions drawn from the governance research showed that the CAS 'field' situation was being affected by communication barriers between the stakeholder representatives and a lack of internal marine/maritime expertise. However in conjunction both stages of the research provide the study with the necessary information to develop a sustainable governance organisational model and which could be used by coastal managers to underpin grass root CAS management.

The sample sites, although characteristically unique to the South West (SW) of England contain features which are geographically comparable with many other coastlines. For instance, estuaries, long sand beaches or ports and small harbours. Hence the findings of this study should have a general applicability for coastal managers in a diverse geographical range of CAS sites.

Topography was not the only justification for the choice of the South West as a case study location for this CAS study. CAS is an increasingly important component of the tourism and leisure industry and has therefore certain economic implications. The generic term 'sport' contains not the original singular social value, but now behaves as a catalyst for a number of alternative values. The 'special attractors' of CAS are currently providing

'value' economic drivers for local communities through the mechanisms associated with the tourism industry. Therefore it was necessary that the study considered tourism and leisure activities. For instance, the total UK marine related turnover in 1999 accounted for £51.2bn, and the marine leisure sector made up 17% of this. This was superseded only by the marine oil and gas sectors (Foresight, 2000).

This study will demonstrate that sustainable management of CAS is inextricably linked to many associated coastal physical and legislative developments and will suggest that these need to be placed under an umbrella of 'sympathetic management'. Unless this happens the findings indicate that unbridled growth of CAS will ultimately challenge the aim of sustainability for the coastal zone.

The study will go some way to unravelling the perceived 'mesh' of coastal planning and help to expose many of the complexities that are associated with this particular sport's multi-functional system. This will fulfil the purpose of this study, which is to aid coastal planners and managers by providing robust knowledge of the implications of aquatic sports.

## **CHAPTER TWO: THE HUMAN VALUES ASSOCIATED WITH SPORT AND THE COASTLINE**

### **2.0 Introduction**

A major aspect of this study is its focus on the coastal zone and the attached social values from its use for leisure and sporting activities. This chapter will demonstrate how these activities impact upon the environment and will suggest the presence of pressure including the spheres of leisure production and consumption. Leisure performs an extremely important role in society; McCormack (1994) suggests that leisure allows the free exercise of the human creative capacity. However social systems are extremely complex and there are many human issues such as psychological motivators and culture attached to leisure and sport. Therefore this chapter will explore some of these issues to provide an understanding of the characteristic profiles that may be indicative of individuals that participate in Coastal Aquatic Sports (CAS). Furthering this CAS participant profile examination this chapter will also describe the fundamentals associated with the individual CAS: 'what, how and when' they emerged. This will also introduce CAS governance because National Governing Bodies (NGB) formed in parallel with CAS development to manage CAS. In addition to NGB governance, CAS are linked to social initiatives developed by central Government executive agents the UK Sports Council; this point has important implications to the development of this study.

In contrast to the social benefits associated with CAS, coastal activities are also shown by this chapter to be coupled to tourism, and tourism has an economic driver that is fuelled through the maximisation of competitive strategies. This also has important implications for CAS because the economic drivers to maximise CAS participation associated with tourism are likely to produce negative effects, such as resource over-consumption.

Therefore, the economic processes that link CAS and tourism will be discussed comprehensively during this chapter.

## **2.1 The Historical Overview**

Coasts and estuaries are types of space that are significant for 'social values.' Haggett (1979) noted that:

“People were historically creatures of the strandline between water and land . . . In prehistoric times the beaches were used as a highway; in the Renaissance they were used as a springboard for colonisation and conquest. Even in the latter half of the twentieth century, the biggest cities are on the strandline: three quarters of the world's largest urban centres – those with over 4 million inhabitants – are on the ocean or lakeshore.” (Haggett, 1979 : 9)

Hence, beach spaces have an important role in human development and the strandline provides the medium for many types of different social interactions, some of which have produced important cultural building blocks. The 'strandline' or coastal fringe in the 21st century is still a medium for social interaction, and in developed countries these include recreation and leisure activities.

The UK has a 15,311 km coastline (Natura, 2000) and this coastal environment has many types of activities of which several produce environmental pressures with either a land or sea perspective. Table 2:1 below lists these.

<b>LANDWARD</b>	<b>SEAWARD</b>
Port and Harbour Works	Waste Disposal
Land Reclamation	Increased Leisure Sailing
Marinas & Moorings for Leisure Craft	Dredging of Navigable Channels
Tourism & Recreation Facilities	Sea Fishing
Power Generation (e.g. wind)	Water Sports and Bathing
Coastal Superquarries	Marine Aggregate Extraction
Major Developments on the Coast: Refineries, Terminals etc	Oil & Gas Production
Coastal Defences	Tidal & Wave Power Generation
	Marine Fish Farming

Table 2:1 UK Landward and Seaward Coastal Zone Pressures, (DoE, 1995a).

The Department of the Environment (DoE, 1995a) attempted to encompass these features by defining a 'coastal fringe'. It stated that the coastal zone should include cliffs, estuarine marshes, mudflats, saltings, coastal lowlands, sand dunes, and encompass manmade features such as sea defences, port and dock facilities, harbours, marinas, promenades and piers. The DoE definition suggests that the coastal fringe incorporates many elements that are of great social 'value' and this has clear links with human 'need'. For instance, Redclift (1987) stated that:

"Use values are taken from nature but assume 'value' only when meeting human needs. If they are not put to the service of human purposes, use values revert to the natural sphere from whence they come." (Schmidt, 1971, cited by Redclift, 1987: 134).

Although this 'humanisation' of nature and its association with 'value' takes on many forms these are rarely fixed in type. The main point here is that due to the evolution of man in parallel with nature it is the social value assigned to the natural environment that then makes that environment a human resource. The socially selected resource may then possess human value and, on a growth continuum, this human/social value develops into an

exchange value, thus achieving commodity status. This commodity status creates external complications because the associated economic drivers aggravate the natural/social polarisation. Redclift (1987) noted three types of conflict associated with a natural environment with a commodity value, these being in the spheres of production, consumption and nature. Hence, according to Redclift human activities within the coastal zone will be implicitly associated with tensions linked to these three types of conflict. However, the value of the coastal zone for coastal aquatic sports is markedly important because there are complex human psychological elements associated with the individuals that engage in the activities that take place there.

## **2.2 Leisure and Sport in Society**

This section will consider leisure and sport in society and show how their values can only be appreciated through an understanding of psychological motivators. The examination of these psychological motivators will allow profiles to be developed that may be indicative of the individuals that participate in Coastal Aquatic Sports (CAS).

Leisure performs an extremely important role in society; for instance, McCormack (1994) suggests leisure allows for the free exercise of the human creative capacity. Therefore, this study will consider sport as an activity associated with the leisure choice of an individual and the following discussions will focus on this. In society, sport is perceived to operate in various roles, for instance the functionalist theory stems from the belief that there is:

“ . . . a relationship between sport participation, good character, achievement and motivation. Sports also achieve social integration in groups, communities and societies, and finally sport participation develops the abilities needed to defend society against external threats.” (Coakley, 1997: 49)

One consequence of this functionalist interpretation is that sports participation can become part of a government social strategy. For instance, in 1972 the UK population was encouraged to take part in active recreation by the founding of the Sports Council by the UK government. This was designed to support the previous drive by the government in the post-war years towards a 'fitter nation.' And the Sports Council was responsible for encouraging the population through a 'Sport for All' incentive to take an interest in exercise and personal health care by visiting health and sport centres (Sports Council, 1995). This incentive placed 'sport related' emphasis on those sections of society that were perceived to require participation encouragement, and these included women, ethnic minorities and the disabled.

Both public and private sectors adopted this 'Sport for All' initiative and the 1970s and 1980s witnessed an extensive growth in many types of sporting activities. These included Outdoor Management Development (OMD) programmes and Outdoor Education (OE) programmes. These programmes promoted the 'great outdoors' as the setting for a healthy lifestyle and OMD programmes utilised the natural environment to replicate the characteristics of organisational life of business individuals. Symons (1994) suggests that the perceived hostility and unfamiliarity of the natural environment is commonly accepted as assisting in the development of both leadership and decision making skills.

The OE programmes differ from the OMD programmes in that the OE programmes are aimed at children and young adults. These were perceived by the National Association of Outdoor Education in 1970 as a means of approaching educational objectives through guided direct experience of the environment and by using natural resources as learning materials (Cudmore, 1994). These initiatives resulted in an increased awareness by the UK population of activities in the natural environment and this in turn instigated a movement to dynamic water-based activities.



The functionalist theory (Coaklely, 1997) suggests that sports-related drivers would actively influence social behaviours and act as a mechanism for 'socialisation'. This is defined by Durkin (1995) as the process whereby people acquire the rules of behaviour, the system of beliefs and attitudes that equip a person to function effectively as a member of society.

The fact that socially desirable skills are thought to come from participation in sport emphasises the importance of sports in society and sport is recognised as an instrument for enhancing social integration and cohesion.

When these ideas are applied to CAS it is evident that because CAS operates in a specific environment the participants will have certain distinctive characteristics. One of the objectives of this study will therefore be to enquire into individual CAS participant perceptions of their sport. This will provide information from which certain 'CAS participant characteristics' will emerge. However, issues relating to sport are complex and multi-faceted and numerous psychological factors are perceived to affect participation. These must be considered before a profile of persons who take part in leisure activities that include CAS can be characterised. The following section discusses these psychological aspects.

## 2.3 Psychology of Sport

Motivation is the vital element in sport psychology and therefore to understand why people take part in CAS the first step is to understand their psychological motivators. Maslow (1954) suggested that the driving force of a human motivator is the desire to fulfil a need and that these needs could be placed in the hierarchy in Figure 2:1.

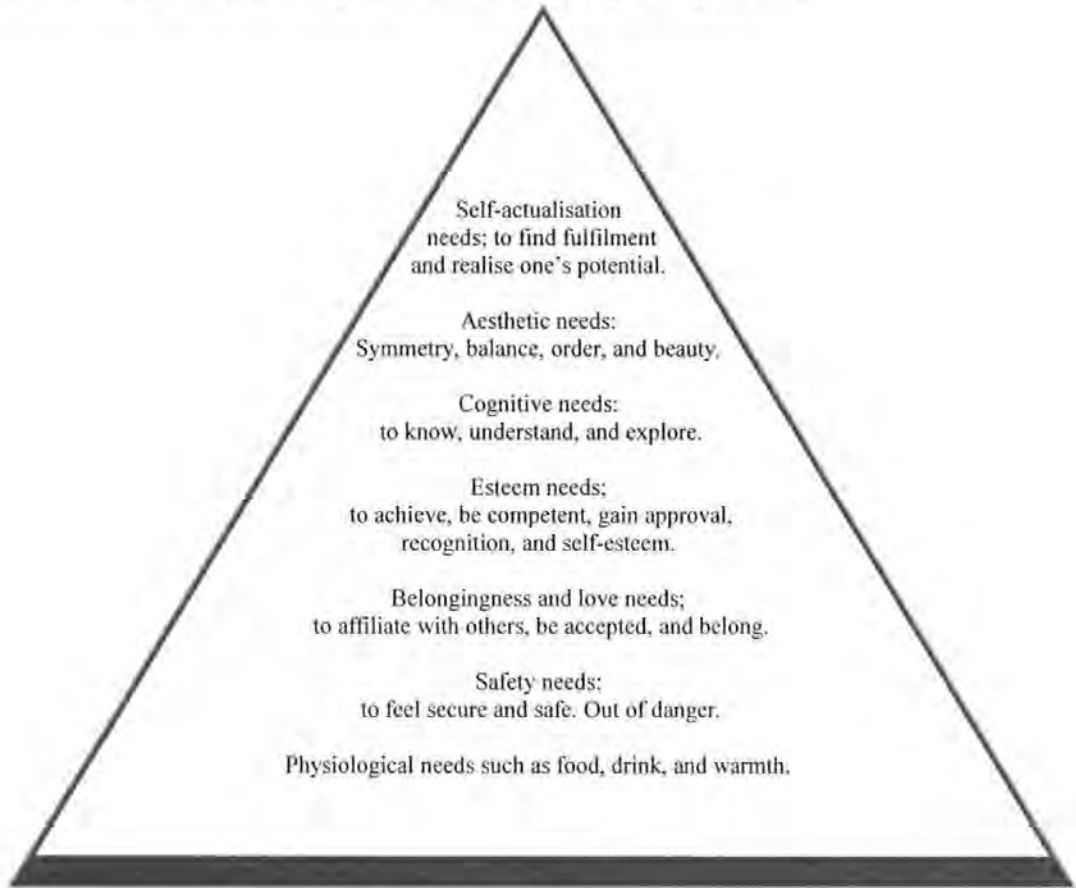


Figure 2:1 Maslow's Hierarchy of Needs, (1954) from Woods (1998:2)

Maslow suggested that self-actualisation, at the uppermost end of the hierarchy can only be achieved after lower need motivational factors. However, Woods (1998) notes that through the medium and direction of sports, self-actualisation can be achieved without lower need factors being involved. This suggests that self-actualisation may be achieved through sporting activities from many levels or directions.

Psychological sports research suggests that personal motivation is the primary driver for participation in sports and that the 'achievement of needs' or the gaining of personal achievement is the specific motivational key (Bull, 1991). Personal motivation can take on two guises; those that are intrinsically stimulated or those that are extrinsically stimulated. Goal achievement can therefore be motivated from internal or external sources. Intrinsic sources are defined by Cox (1999) as motivation that comes from within and not determined by external rewards.

Motivations that are extrinsically led are noted by Woods (1998) to be associated with 'trophies or cups' or 'prestige or praise' and contain negative traits which, if present in isolation from intrinsic motivators, could create de-motivation. Problems associated with extrinsic reward are the feeling of being out of control and the damage to self-confidence if there is a failure to achieve. The current research does not encompass competition participants and therefore no further discussion of these will take place.

Hence, when assessing intrinsically led motivations it is important to note that they resemble positive forms, in as much that an intrinsically motivated person will remain interested in an activity when that activity gives rise to feelings of competence. Thus one can make the association between sporting activities giving rise to feelings of self-fulfilment, self-confidence and individual personal development. These concepts and links between self-fulfilment, and self-confidence and personal development are important for an understanding of the way CAS participants perceive themselves and their activities.

Understanding the differences between the motivational requirements of sporting individuals is important because Weissinger and Bandalos (1995) suggests that the sport related choices of individuals are determined by certain individual behavioural characteristics and these must also include attitude and perception. Therefore, some CAS

participants may have similar characteristics. This line of reasoning will be discussed further because it will lend significance to the way in which the particular management needs of CAS are approached in this study.

CAS takes place in a coastal environment, which is different from many other sport environments. For example, it is a natural environment and is often hostile. Sports that take place in seemingly non-hostile 'managed' settings such as football fields, cricket pitches, or even swimming pools have an effect on the perceptions of risk and this effects the desirability of certain sports. Thus, perceptions and attitudes are an important factor in the profile of CAS participants and are discussed further.

### **2.3.1. Attitude and Perception of Sport Participants**

Sports may be grouped in a number of ways. For instance, the amount of energy used by a participant in a sport can be a determinant for the classification of a sport as active or passive. Swimming, for instance, may be appreciated as an active sport whereas snooker may be noted as a passive sport. Team sports also differ from individual sports. A study in 1977 by Schurr *et al.*, (cited by Jarvis (1999)) identified significant personality differences between those who take part in individual and team sports. Team sport participants were found to be more 'anxious and extrovert than individual competitors'. Jarvis (1999) emphasises that other studies have also shown that endurance sports participants are unusually high in achievement-motivation, autonomy, dominance and harm avoidance whilst rock climbers were found to be high on sensation seeking and low on anxiety.

Sports may also be classified by their associated risks. Jarvis (1999) noted that tennis players were low risk, karate participants were medium risk and para-sailors were high

risk. Therefore, sports that take place in the outdoor environment contain elements associated with upper levels of risk.

Following the deaths of four teenagers after a canoe tragedy in 1993 at Lyme Bay, Devon, there was discussion of the extent to which hazard and danger are central to the true outdoor experience. Barnes (1998) suggests that society is so obsessed with safety that the development and growth of individuals is being limited in a fundamental way. However, an opposing argument was presented by David Jamieson MP in 1997 who suggested that activities should be challenging without being hazardous and should provide excitement without danger (Barnes, 1998).

Adventure is often equated with risk taking Meire (1978); Miles (1978); Ewert (1989) and Walle (1997) all suggest that experiencing risk is an essential motivation for those involved in adventurous activities. Walle (1997) further defines adventurous sports as embracing the types of risk and uncertainty associated with rappelling or sailing (high-risk activities). In relation to CAS this high-risk uncertainty is further examined by Farmer (1992) who suggests that, for instance, surfing is like a fight between the surfer and a wave and to 'master nature' the surfer would need to outthink the wave. Farmer, by using the term 'fight' assimilates the surfing experience into situations where the risk of personal injury is heightened.

When analysing perceptions of risk two distinct theoretical frameworks become evident. Walle (1997) questioned whether the individual is seeking the sport for the thrill of the risk (standard risk theory) or whether the associated risk is a by-product of another motive. Standard risk theory suggests that it is the risk for its own sake that is attractive because the peak experiences and emotional rewards that are gained by challenging environments assist in the achievement of self-actualisation. This perception of risk is exemplified by a

CAS surfing participant who stated, "To make yourself paddle into a big wave requires a tremendous exercise in self-discipline. Also there is always the possibility of self-destruction" (Noll, 1965; (cited by Farmer, 1992:246)).

However, Walle (1997) also suggests that this standard risk theory must be counterbalanced with the 1836 Ralph Waldo Emerson transcendental ideas. This suggests that risk is but a by-product of adventure and that adventure sports are sought by participants because the natural environment acts as the catalyst for gaining intuitive knowledge (See, for instance Muirhead, 1962; (cited by Farmer, 1992:247)).

Risk, motivators, personal development, insight and individuality all have social elements and as the discussions above indicate, each has a possible link to CAS participation. However there is still one other element that has an important effect on CAS participants. This constitutes the impacts on CAS from social interactions that often include different participant mixes which produces different CAS cultural fractions. Cultural differences are therefore important to this study, because the attitudes and perception of CAS participants have strong cultural links. These issues are discussed below.

### **2.3.2 Sport as a Culture**

Sport not only acts as a catalyst for personal development and social cohesion but it also produces individual cultures and sub-cultures associated with particular sports.

Giddens (1998) perceived culture to be power related because it can contain distinct values and norms that may differ or contrast with other cultures and therefore support unique patterns of behaviour. For instance, Giddens (1998) suggested that exclusive forms of expression and language play an important part in the human cultural identity processes. The important role that culture plays in society was emphasised by Mitchell (1995):

"Culture, therefore, can be specified as something which both differentiates the world and provides a concept for understanding that differentiation. Culture itself is a sphere of human life every bit as important as, yet somehow different from, politics, economy and social relations. It is an important ontological category, which must be theorised and understood if we hope to understand human differentiation, behaviour, experience and contest." (Mitchell, 1995 (cited in Johnston, 1997: 205))

Class-related cultures in sport have altered quite dramatically during the last 50 years. The Sports Council 1972 'Sport for All' initiative (Section 1.2) reduced social class divisions in sports and resulted in social closure processes having less impact upon the overall sports landscape. However perceptions of social class and their related values still persist and are included in this inquiry because CAS participants come from a variety of social strands. For instance, many social classes are perceived to have culturally identifiable different perspectives on certain organisational techniques associated with certain sporting establishments (e.g. the club-house, memberships, booking systems and charges). Hargreaves (1986) suggests this system resembles a 'bourgeoise – club model' and it serves to alienate certain social strata, because it embraces recreational values that have class related cultural differences.

Sport cultures are multi-dimensional and can be formed from many different standpoints. For instance, localism is a form of culture that pervades the sporting landscape; Hargreaves (1986) notes examples in soccer of 'loyalty to one's mates and local community'. Sport cultures are also influenced by external perceptions; for instance, the media have a great impact upon the way that many CAS-related cultures have emerged. The aquatic sporting participant and the associated equipment (with particular emphasis on clothing) has, through media mechanisms caused the CAS arena to embrace a culture that includes both the fashion and music industries. For instance, an event in Newquay Cornwall, known as the Headwork Surf Festival, is described by Alexander (1996) as more 'Woodstock-on-

Sea than a sports meet . . . a fashion event where the look is cast-a-way chic, a mix of grunge, rock, rave, hippie and classic surfer’.

The influence of industry and media pressure on CAS culture formation has furthered and intensified individual culture characteristics and the consumption of the sporting resource has consequently been coupled with the consumption of fashion. Through this coupling, sub-cultures can express cultural association through visual signals. Hargreaves, (1986) suggests that sport-power aspects of sport culture are contained in the twin notions that sport is best categorised as a cultural formation and that cultural elements constitute the ‘absolute fundamental components of power networks’. The power relationships that may evolve from the cultural bonding of CAS individuals also present certain problems for sustainable CAS management. These problems, and in particular their resolution, serve as one of the drivers for the current investigation (Section 3:2).

Cultural relationships can create coherence and power groups which are then recognised as status groups; communications between these status groups can then become complex and territoriality and hostility to outsiders can begin to emerge due to the forging of these types of cultural relationships. Coser (1966) states that:

“The translation of hostility into overt conflict is most likely to occur when there is a decline in the perceived legitimacy of the social distribution of resources. When members of a negatively privileged group come to feel that their subordination is due to an illegitimate pattern of distribution that involves processes of denial or exclusion, their hostility is likely to be expressed in open conflict. Conflict then forges the members of the group into a truly cohesive collective agent, a ‘struggle group’. The group’s identity is reinforced and it achieves a high degree of solidarity and cohesion.” (Coser, 1966:198)



This statement is important to this study because it exemplifies the way that human conflict can evolve. This is particularly true for CAS because these types of cultural formations occur when resource space becomes over-exploited and different user groups compete.

The foregoing discussions suggest that CAS is a high-risk adventure or wilderness sport and part of a unique sporting landscape. The individuality of the CAS participant is emphasised by the suggestion that risk may be perceived from two different perspectives and that CAS participants' individual motivations may derive from two different standpoints. These factors are further complicated by the multi-dimensionality associated with culture and sub-culture. The individual profile of a CAS participant is therefore a structure of multiple characteristics, which has the ability to evolve and develop singular cultures that may serve as a social power source.

Thus, an objective of the current study will be to explore CAS participants' perceptions of culture in the overall CAS landscape and the motivations and the risks that they can associate with their particular activity.

## **2.4 Overview of Aquatic Sport on the Coastline**

Although there are many historical references to watercraft it was not until the 16th century that records indicate that coastal aquatic craft were being used for sporting recreational purposes (Goodhead and Johnson, 1996). These types of Coastal Aquatic Sport (CAS) were predominately linked to sailing yachts and participation was restricted to the aristocracy. For some 100 years the yacht continued to be the primary CAS activity in the Western Hemisphere. For instance, the first associated club was formed in 1720 (Water Club Harbour of Cork). The further development of yacht clubs instigated the first yacht

race in 1770 at Cowes and this particular club became the Royal Yacht Club in the same century (Goodhead and Johnson, 1996).

The demands of the two world wars contributed to the development of 20<sup>th</sup> century CAS. This is because they prompted new technologies for boat construction, which in turn produced smaller cheaper ocean-going craft. These developments created the climate for an increase in leisure sailing and powerboat participation as they became more affordable. Other aquatic sports were similarly affected.

The development of CAS due to the increased accessibility of aquatic equipment has been documented. For instance, Goodhead and Johnson (1996) note that the British Water Ski Federation was formed in 1949 and the British Sub Aqua Club in 1953. During the 1950s CAS developed into a multiform industry, with many derivatives of the traditional craft such as the windsurfboard. However, the actual participation numbers in different types of CAS are difficult to assess because accurate statistics are not available. This point is emphasised by Goodhead and Johnson, (1996) who noted that participation information in watersports was 'bitty and inadequate' and that the watersports market was statistically badly documented. Due to the lack of accurate participant information relating to CAS, this study required an independent descriptive and demographic profile to appraise each individual CAS. This includes specific information for participation increases, along with other specific characteristics, history, trends, and technological design developments.

## **2.5 Identification of UK Coastal Aquatic Sport (CAS)**

This study identified 12 CAS: sailing, powerboat, personal-watercraft (PWC) (jet-ski), windsurfboard, wave-ski, sea-canoe/kayak, surf-longboard, surf-shortboard, surf-bodyboard, sub-aqua, swimming and sea-angling (fishing).

Although these 12 CAS may be appraised individually, some contain similar attributes and it is important to identify these because they may prove to be contentious during the data analysis. One is the term of 'surfing'. Generically 'surfing' refers to any vehicle that use waves as an energy method or part method for craft propulsion. For instance, the surf kayak and the wind surfer both use wave power as a source of propulsion even though this is coupled with other energy sources. The surf kayak combines a human source of energy (paddle) with wave energy, and the wind surfer combines wave and wind energy. However, there are certain CAS that use solely wave energy for propulsion and these sports need to be examined separately from those using a combination. The definition of 'surfing' used in this study is provided by the British Surfing Association (1998).

"Surfing is defined as those sporting activities, undertaken individually and collectively, taking place within the surf line, but excluding those activities that incorporate the use of paddles, sails or motor-power." (BSA, 1998:91)

Taking this definition as a lead it would seem that the most appropriate mechanism for CAS category condensation is through an energy classification approach using the idea that the 12 individual CAS may be categorised into fuel, wind, wave and human energy powered.

- **Fuel** will therefore be used for the CAS of powerboat and personal-water craft PWC /jet ski
- **Wind** will be used for CAS of sailing and the windsurfboard.
- **Wave** will be used for the CAS of wave-skiing, longboard surfing, shortboard surfing and bodyboard surfing.
- **Human** power source will be used for the CAS of sea-canoe/kayak, sub-aqua, sea angling and swimming.

### 2.5.1 Sailing Craft (wind)

The sail craft is steeped in navigational history. For instance the Polynesians traversed the Pacific in multi-hulled craft, the Arabs travelling in dhows, the Chinese in junks whilst the Europeans concentrated upon the square –rigger (Cox, 1999).

However, for recreational purposes it was the 16<sup>th</sup> century (discussed already in Section 2.4) that provided the first recordings of aristocracy involved in ‘sport’ sailing. Section 2.4 also highlighted that the new technologies and construction materials of the post-war years contributed to a wider social sailing appeal; in particular the smaller, light, sailing dinghy. Further stimulating public interest was the 1973 first Whitbread Round the World challenge.

Also during this time period the total attainable speed of sail craft rapidly increased because of the new light and strong construction materials such as carbon fibre and kevlar. Other design advances such as the multi-hulled craft increased the versatility of the small sail craft Cox (1999) notes that many of these craft could land/launch from and onto beaches even through surf conditions.

The main types of sailboats operating in the coastal fringe are dinghies or keelboats. These can sail in shallow water and can be launched and sailed from a variety of locations inclusive of rivers, lakes. Sail clubs offer dinghy racing, Cox (1999) suggests that racing is a method by which participants achieve a steep ‘sailing’ learning curve. The keelboats are larger than the dinghy and are in fact small yachts but due to the fixed keel is limited to deeper water, they may carry crews of up to four. It is at this level that the CAS participant requires further skills. Cox (1999) identifies the knowledge of navigation (manual and electronic), global positioning systems (GPS) and radio operation (VHF) as essential for safety purposes.

Navigation of a sailboat in a marina is usually accomplished with auxiliary power sources although Cox (1999) notes any excess speed as cause for 'concern'. This is because in the same fashion as a fuel-powered craft the reverse gear of the engine is the main method of impeding the forward motion of the craft and this method is unreliable.

Formed initially as the Yachting Racing Association in 1875 the National Governing Body (NGB) for sailing is the Royal Yachting Association (RYA). The RYA (2002) stated that they had 95,000 personal members and provide training schemes in which there is a take up of some 130,000 places. (This figure includes courses designed for powerboats and windsurfboards). The RYA also develops the sports code of practice for their associated CAS and these are designed to minimise potential impacts that are caused by the different power abilities and speeds of individual craft. One of these codes relates to the navigation lighting that is provided on both sail and fuel powered crafts. These lights indicate to other craft operating in the same area the size and method of an individual craft's propulsion

Individual participation figures for the many forms of boating are difficult to gauge accurately because the second hand boat market makes overall boat ownership difficult to quantify. However the British Marine Industry Federation (BMIF) conducted a Boating and Watersports Survey in 1998 and the results showed that:

- 7.8 million adults in the UK participate in boating and watersports
- 3.2 million people live in households which own a boat (owners)
- 4.6 million participate but do not own a boat (enthusiasts)
- 5.3 million people are interested in boating and watersports but do not currently participate (potentials)
- 7.1 million people used to participate but no longer do so (lapsed participants)



'concern' because the reverse gear of the engine is the main method of impeding the forward motion of the craft and this method is unreliable.

Mintel (1997) noted that a total of 31% of all new boat sales to UK end users in 1996 consisted of power driven craft and that 37% of those were sea going motor cruisers, 7% estuary motor cruisers and approximately 1% sport power boats. Mintel also noted that the ownership of these types of boat fluctuated year on year. The affluent years of the 1980s providing a particular boost to ownership, with an overall long-term projection suggesting that the powerboat market would expand.

The Natura report (2000) acknowledges that there are some 367,000 motorboats owned in the UK making power boating the second most popular participant CAS after sailing boats. The largest concentrations of motor boats in the UK are on south-coast locations particularly the Solent and Poole Harbour (Natura, 2000).

Records made from two former Local Authorities (LA) of Whitstable and Herne Bay in 1960 provides a comparison which emphasises the growth of power boating. These records relate to the provision by the authorities of four unrestricted ski-boat lanes that were provided to enable ski-boats to pick up and drop off skiers. The four unrestricted lanes were ideal for use by CAS participants during the sixties and seventies. However, during the August bank holiday in 1990 over two hundred powered craft were counted in the water, 140 power boats, 33 personal water craft, 30 fishing boats and 6 RIBs (Rigid Inflatable Boats) (BMIF, 1999). This illustrates the upward surge of power related activities within a relatively short time scale.

Types of powerboat range from small open craft with an outboard motor to more complicated luxury motor cruisers. The smaller craft can be launched at both informal and

formal points of access as well as at public slipways whilst the larger craft are restricted to locations such as marinas. The National Governing Body (NGB) for the powerboat is the RYA and this association provides the Sport Codes of Practice (SCP) for the correct control and navigational procedures. However, the Foresight Report, (1997) points out that a registration certificate of competence and insurance for CAS powerboat participants is not compulsory.

**2.5.3 Personal Water-Craft (PWC) (fuel)**

The Personal Water-Craft (PWC) was formally known as the ‘Jet-ski’ because Kawasaki patented the first model under that trademark and remained the exclusive manufacturers for 10 years (1975 – 1985) (Anderson and Harris, 1998). The PWC differs quite dramatically from other forms of fuel driven craft, in that the PWC uses a jet drive and the craft are steered using handlebar linkage systems similar to road motorcycles. The BMIF (1999) note that PWC can attain high speeds of up to 63 knots and are easy to manoeuvre and because of this rescue services are increasingly incorporating these types of craft as part of their technical back up.

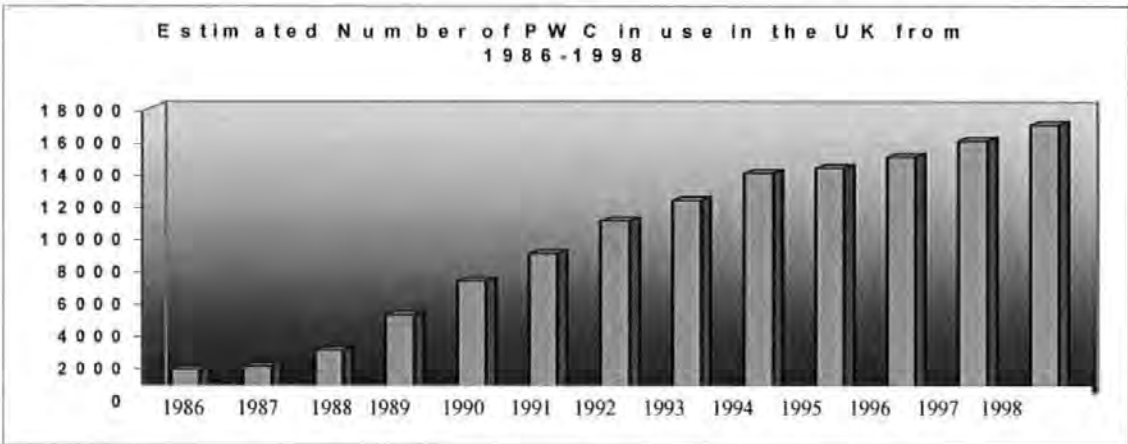


Figure 2:3      Estimated Number of PWC in Use in the UK from 1986-1998    (BMIF, 1999)



Figure 2.3 shows the growth of the PWC popularity as a form of leisure pursuit. The annual sales of new machines are approximately 1,600, although because there is also an unknown number of new machines being privately imported, overall total numbers are difficult to estimate (BMIF, 1999).

The sharp upward trends of PWC participation numbers have created problems. This is because, in a similar manner to powerboat and sailcraft, the PWC participant is not required to obtain registration certificates of competence and furthermore insurance is not compulsory (Foresight, 1997). The size, shape and weight of the PWC also aids ease for informal coastal access and PWC participants take part in their activity close to the coastal fringe. These factors coupled with high speeds have caused a number of calls for safety awareness.

The original organisations associated with the PWC were manufacturer led and concentrated on establishing racing rules and maintaining access to waterways. Anderson and Harris, (1998) perceive this to have been a particular problem relating to PWC because it was in contrast to other more traditional CAS that had established lead bodies and codes of practice. This lack of sporting governance initially created negative consequences for the PWC that in turn initiated a response by PWC manufactures. The Marine Engine and Equipment Manufactures Association, in alliance with the British Marine Industries Federation, encouraged the Royal Yachting Association (RYA) in 1998 to accept responsibility for the provision of PWC competence training (although this is non-statutory). Furthermore, since 1998 all PWC are sold with a detailed user manual and a video developed by the Royal National Lifeboat Institution, Marine Safety Agency and the Coastguard Service (Anderson and Harris, 1998). How valuable this is remains to be seen.

#### **2.5.4 Boardsailing or Windsurfboard (wind)**

Oakley (1994) notes that Hoyle Schweitzer in the USA invented the first sailboard in the mid-1960s and that this was then manufactured as the windsurfer. However it was not until 1973 that the sport was recognised in Europe where it was initially known as boardsailing as the term windsurfer had become a registered trademark. Due to the complexity that has arisen from this term, this study will term the sport as windsurfing because the terms 'board' and 'sailing' may provide confusion with other types of CAS.

Windsurfing is a 'combination CAS' because it has attributes associated with both sailing and surfing. The similarity of the sport with surfing is suggested by Oakley (1994) to be because of the existence of different sizes and shapes of board that may be used, each of these functioning for special conditions. The similarity to sailing is apparent in relation to the different types of sail that may be used in conjunction with the boards. These are determined by the participant preferences or by wind velocities. Oakley (1994) notes that the windsurfer can reach speeds in excess of 28 knots on flat waters and that the interaction of wave energy has the potential to increase this speed. This is far faster than those CAS that are solely dependent on the speed of a wave for travel.

The RYA (Section 2.5.1) is the National Governing Body (NGB) for windsurfing and has provided the sport codes of practice (SCP) rules and the manner in which a windsurf participant should negotiate the surf line. The RYA classifies the windsurfboard when afloat as a sailing vessel and because of this the windsurf participant is expected to conduct himself according to the International Rules for Preventing Collisions at Sea (IRPCS).

### 2.5.5 Wave-Surfing

Surfing is a generic term used to describe the way that certain CAS use the energy from wave sources to propel their craft and the purposes of this study will require individual classifications of the different craft types.

Conway (1999) suggests that servicemen returning from war between 1914 and 1918 introduced board surfing to the UK and that raised public awareness to surfing is associated with the 'war technical developments' that provided the catalyst for advanced construction materials.

The longboard remained the central thrust of the surfing sport until 1965 when an Australian designed the V-bottom, which radically changed the sport. Conway (1999) suggests that this is because the new design shortened the longboard by some 0.5 – 1 m, which then resulted in the need for a different method to surf a wave.

The British Surfing Association (BSA), formed in 1966 is the NGB for the sport and administers competitions, UK surf coaching and the surfing sport code of practice (SCP) for participants (BSA, 1998). The SCP encompass methods for avoiding impacts, covers issues of personal safety, consideration to other water-users and certain other legal requirements.

The BSA suggests that in the UK surfing participation totals some 100,000 (Conway, 1999). However, this figure is heavily contested as it is based solely on BSA membership numbers - there are no accurate total participation figures.

As discussed in Section 2.3.2 culture is deemed to have an impact upon certain sports; both the media and the BSA note that surfing possesses many cultures and sub-cultures.

The cultures and sub-cultures that have emerged from surfing are perceived to have derived from the conflicts between surfboard riders and members of surf lifesaving associations (SLSA) in the early 1960s. It is documented by Pearson (1982) that in early years of surfing the sport became inextricably associated with surf lifesaving. However, the SLSA had a regimental culture, which revered competition and strict training procedures. This approach caused problems during the 1960s. For example, Pearson (1982) suggests SLSA perceived that the new v-bottomed surfboards did not lend themselves to life saving operations and that hence it was a threat to their official operational methods. The result of this was a culture separation; one culture accepted the SLSA officialdom whilst the second broke away and sought to pursue 'hedonistic wave-riding activities' (Pearson, 1982).

This separation of surfing cultures caused several sub-cultures to emerge, which attached themselves to different surf-craft. For instance, the longboard and shortboard have different individual attributes, which encourage different viewpoints by the individual participants. The elements of 'hedonism' 'youth' and 'freedom' linked by Pearson (1982) to shortboard riders are now central to the culture of surfing and these elements have been subsequently strengthened by fashion and music relationships. The use of the surfing cultural indices brought surfing to the attention of the larger UK population and this resulted in a surge of interest during the 1980s and 1990s. Increased surf school participation numbers (Figure 2:4) recorded by the Fistral Beach, Newquay BSA Surf School reflect this growth.

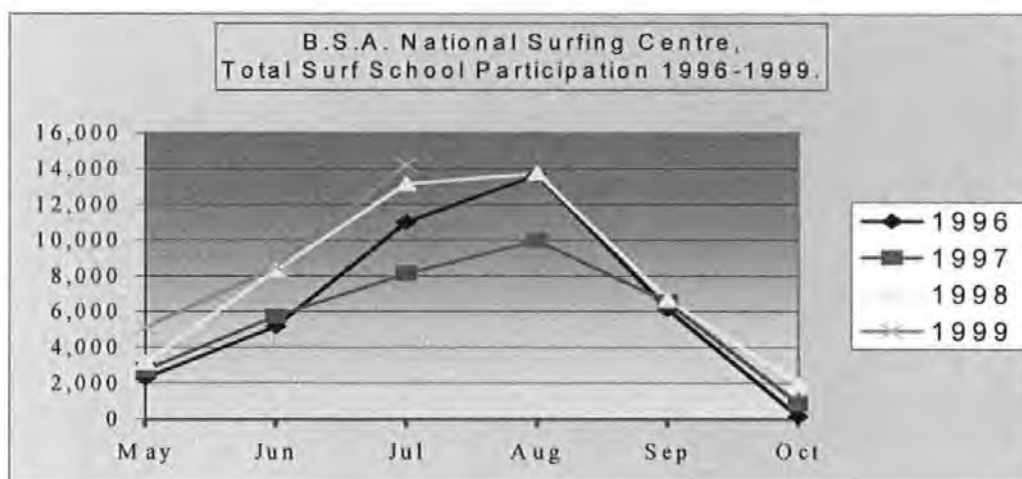


Figure 2:4 Total Participant Number of Surf Lessons During 1996 – 1999, (BSA, 1999).

#### 2.5.5.1 Longboard Surfing (wave)

Longboarding is a derivative of the CAS associated with surfing. It is dependent on the formation of waves to provide the energy for propulsion and the sport. Longboarding is noted by Young (1994) to have been taking place in Hawaii since 400AD and that in Hawaii class stratification systems played a great part in the sport with some beaches reserved for ruling classes. This may perhaps be one of the first examples of beach zoning in practice.

Conway (1999) points out that the length and width of the longboard assists with overall flotation and that this allows the participant to access waves easily and also provides for the craft stability. However, the longboard's 'length and width' is associated with participant difficulty in the access of surf zone. Conway (1999: 14) states that "When a Malibu [*Longboard*] rider gets caught inside the breaking surf he or she will get washed a long way backwards, a distinct disadvantage of a long, highly floatable surf-board." The most important achievement for a participant of the CAS longboard is achieving the ability to 'walk the board'. These movements are self-descriptive and aid steering of the craft

and allow the surfer to perform certain 'athletic tricks' that are associated with the longboard sport.

#### 2.5.5.2. Shortboard Surfing (wave)

The shortboard style of surfing differs from longboard surfing; the shape is sleeker and shorter than its counterpart and it has a pointed or needle nose, Conway (1999) notes this as being 'dangerous to surfers'.

Because of its shorter length the shortboard has a number of advantages over the longboard. The steerage of the shortboard is primarily attributed to body weight and specific distribution, rather than the walking actions that drive its counterpart (Conway, 1999). However, due to the loss of total surface area, the shortboard becomes less effective at 'catching' the wave, thus the longboard gains the advantage of first wave acquisition. This does generate hostility between the two CAS.

#### 2.5.5.3 Bodyboard Surfing (wave)

The bodyboard is another form of surfing and evolved alongside long and shortboarding. The bodyboard (an evolution of the swimming float) originated from bodysurfing and was first documented in Australia around 1902 by Fred Williams (Young, 1994). It differs from long/short board forms of surfing, because the bodyboard rider remains in a prone position. In general the bodyboard has been perceived to be a safer form of surfing than the long or short surfboard. This is because the construction materials of the bodyboard are softer, thus the chance of serious injury through bodily impact with a bodyboard is vastly reduced.

### 2.5.6 Sub-aqua Diving (human)

The Second World War also initiated the invention of the equipment that allowed free movement underwater. This groundbreaking technology was developed by Cousteau and Gagnan in 1943 (Saunders, 1994). When this 'aqualung' equipment was adopted for leisure activities it contributed to scuba (self-contained underwater breathing apparatus) diving becoming the fastest growing sport in the world in the 1960s and 1970s (BSAC, 1993). In the UK due to the temperature of the surrounding coastal water, the use of a dive wet/dry suit is considered an essential piece of equipment for modern diving.

Although a number of international organisations exist that provide dive instruction (e.g. Professional Association of Diving Instructors (PADI)) the national governing body for diving in the UK is the British Sub-Aqua Club (BSAC) and this has strict guidelines for diving instruction. BSAC note that diving is a 'risk sport' because it involves physical exertion and exposure to unusual physical stresses, e.g., weightlessness, cold, and altered pressure of gases. For safety purposes a diver must have 'sufficient physical, medical and mental fitness and must have obtained suitable skills through training to cope with all possible conditions that he may encounter on the dive' (BSAC, 1993: 136).

Diving is a highly versatile sport and is not restricted (as are some CAS) to the surf-line. Saunders (1994) points out that diving may take place at night or day, at the beach, from a boat, encompass known wreck/cave sites and may include drift diving.

There are special problems associated with diving. For instance it is clearly stated by Saunders (1994) that in the case of a drift dive the diver is 'out of control' and dependent on the current for direction. Saunders further notes that in the case of a beach dive, the diver may have difficulty in getting clear of the surf-line as the turbulence associated with

waves reduces diving vision, and waves may knock the diver down, especially if the weight of equipment affects the diver's ability to manoeuvre.

Boat diving is recognised by BSAC (1993) to be the safest form of water entry, and a dive boat is required to show a blue and white International Code Flag 'A' which indicates to others that divers are in the water. Divers also use Surface Marker Buoys (SMB) that indicate the location of a diver and are attached to the diver by a cord (Saunders, 1994). The speed at which a diver may travel is determined by the dive location because it is noted by Saunders (1994) that a diver may substantially increase his normal finning speed when in a drift current. BSAC (1992:98) notes that a diver may also use a Driver Propulsion Vehicle (DPV) to increase speed and this may accelerate the diver to a speed of 4 knots.

The Department of Trade and Industry (DTI) (1997) noted in 1997 that the total UK recreational diving population was estimated at 80,000 diving regularly, at 15 dives per annum. The provision of higher technology equipment e.g. better instrumentation for improved diver location, buoyancy control, and breathing apparatus, is seen by the DTI as likely to cause further increases in participation.

#### **2.5.7 Sea-Canoe/Kayak (human)**

The Native North American Indian and the Eskimo developed canoes and the kayak for hunting and fishing. These types of craft are unique because of their shape, size and because of the paddles that propel the craft. The British Canoe Union (BCU, 1998) note that the craft was introduced to the UK by John MacGregor in 1865 and that the popularity of the canoe was encouraged by the founding of the Canoe Club (later the Royal Canoe Club) in 1866 (BCU, 1998).



The British Canoe Association (BCA) was formed in 1887 and operated until the 1920s, this period also saw the growth of an International Federation (BCU, 1998). The BCU (1998) notes that the formation of the British Canoe Union (the NGB for the sport) in 1936 was because canoe manufactures stimulated participant growth during this period. The BCU, as the NGB, produced the SCP for sea kayak participants. References in the SCP are relevant to this study because they deal with personal and other risks. For instance, they include specific reference to 'avoidance of collision, crowding, access to the water, knowledge of Bylaws, personal safety and public liability insurance.'

Canoeing and kayaking became more complicated after the 1950s when technological advances made it possible for the standard shapes to alter depending on the type of water paddled. For instance, the BCU (1998) identify wild water racing, canoe polo and, of particular interest to this study, the forms of sea-surf canoe/kayaking that came into being. Around the same period the Corps of Canoe Lifeguards was formed which was eventually linked into 'lifeguard' services on beaches. However it is clear from literature that the acceptance of the canoe-lifeguards for such lifeguard duties was severely opposed as the 'canoe' was perceived as a CAS 'nuisance' (BCU, 1998).

Of particular relevance to this study is the fact that kayak surfing became established in Cornwall in 1952 and the first National Championship that was organised by the BCU took place in the region in 1967. An interesting factor for later reference in the study is that the BCU (1998) suggest that the accepted rules for the sea-canoe/kayak National Championships were those adapted from the rules of competitive longboarding. The kayak is more popular for sea sports than the canoe chiefly because of the kayak's positive behaviour in surf conditions. Therefore this study is more appropriate for the kayak rather than the canoe.

Kayaks are multi-formed in shape and construction materials and a particular kayak depends on individual requirements (double, single etc). It is evident that due to the different uses of the sea-kayak (surf, touring etc.) there are certain compensatory factors related to the shape and construction materials, which affect manufacture. For instance, Foster (1997) notes that in some cases the shape of a kayak can result in low stability and this will be 'less forgiving for the beginner'. Foster (1997) suggests that a long comparatively un-manoeuvrable sea kayak has considerable momentum on a wave and further, suggests that kayak participants should not practise surf technique on a beach in places where other water users could be run down. The point that Foster stresses is that in certain conditions the sea-kayak may become uncontrollable and a potential hazard to others in the water.

It is evident from Foster (1997) that sea-kayak 'handling' in calm water is participant friendly. A beginner in a reasonably controlled environment, for instance, can easily learn basic paddling techniques. However, when the sea-kayak meets with coastal surf-lines, then the nature of the sport changes and craft-water interactions are very different and very difficult.

#### **2.5.8 Wave Ski (human)**

Wave ski is similar to sea-canoe/kayaking and the craft is a derivative of the kayak. For instance, it has a similar shape and retains the paddle to gain propulsion. The wave ski is recognised as being far more compatible to surf-line conditions than the sea kayak because it is more manoeuvrable. Also the participant sits out on the craft, whereas for the kayak the participant sits inside. The wave ski also uses special foot loops situated at the front of the craft for stability (BCU, 1998). The NGB for this sport is the British Canoe Union and the wave ski therefore shares the same general sport codes of practice as the CAS canoe/kayak.

### **2.5.9 Sea Swimming (human)**

Swimming is perceived to be an essential part of man's natural need to hunt and defend. Wynman in 1538 recorded the first type of swimming instruction in a print format (Wilke and Juba, 1992). Wilke and Juba (1992) also note that the first UK National Swimming Society was created in 1837 to organise races in London. Swimming is on most UK pre-sixteen educational programmes, demonstrating the potential for substantial participation. Increased accessibility of swimming pools encouraged by the Sports Council in the 1970s also contributed to further participation. The national recognised body for swimming is the Amateur Swimming Association (ASA) (Wilke and Juba, 1992).

Swimming uses human movement to achieve propulsion and, although waves may assist this propulsion, on occasion this factor is negligible when considering speed. There are few swimming related technical requirements, although in the UK sea-swimming will often include the use of a wet suit.

## **2.6 Technical Developments of Coastal Aquatic Sports and the Current Study**

The post-war years provided the catalyst for the decline in use of heavy traditional materials such as wood and steel as these were exchanged for lighter materials such as carbon fibre and fibreglass. This change has allowed CAS craft to become faster and easier to transport. Sports Council encouragement for participation in sports has also stimulated the marine industries to respond. However, one of the most important technical developments for UK CAS participation is the wet-suit. This is because it has encouraged all-year-round participation, whereas prior to this the sea temperature in the UK coastal environment dissuaded human water immersion at certain periods of the year. Further

developments of the wet-suit (such as titanium linings) have provided improved human protection from external conditions.

2.7 Growth of CAS Over Two Decades

Using the data gathered by Barrington (1976) for Cornwall County Council and information gathered by this author through Local Authority Lifeguard Stations in 1999 an assessment can be made of the growth of CAS in Cornwall. (The details of 1999 data collection will be found in Chapters Four and Five)

MARAZION	1976	1999
	<i>Persons</i>	<i>Persons</i>
Swim	34	300
Inflatable	11	0
Bodyboard	0	3
Surfboard	0	0
Windsurfer	0	3
Sailboat	0	3
Jet-ski	0	2
Powerboat	0	1

Table 2.2  
Aquatic Sports Marazion,  
August 1976 & 1999

PERRANPORTH	1976	1999
	<i>Persons</i>	<i>Persons</i>
Swim	60	460
Inflatable	0	0
Bodyboard	0	100
Surfboard	0	36
Windsurfer	0	0
Sailboat	0	0
Jet-ski	0	0
Powerboat	0	0

Table 2.3  
Aquatic Sports Perranporth,  
August 1976 & 1999

Tables showing Barrington (1976) and Data Collection in this work (1999)

The two dates shown in the tables above are important because the observations were taken in the same month with similar weather conditions (sunny with a slight breeze).

Tables 2.2 and 2.3 show that a dramatic increase in CAS participation has taken place at open beach locations in Cornwall over the past two decades. Furthermore the type of CAS activity on the coastal fringe has changed significantly. The swim/bathing populations

have increased and the inflatable, the most popular craft in 1976, has been exchanged for more dynamic activities, such as body-boarding, surfing or sailing.

Data collected by Carrick District Council Lifeguards at Gyllyngvase Beach Falmouth in 1999 showed that small sail, powerboat, PWC, windsurf, canoe and surfski along with bodyboards and swimmers consistently used the site. Bodyboard and swimmer numbers swelled during the holiday months of July and August peaking at 75 and 200 respectively. The month of July showed a dramatic rise in the amount of preventative advice/situations recorded by lifeguards, reaching a peak of 1,500 in one day on one specific occasion.

At Holywell Bay data collected by Carrick District Council lifeguards in 1999 showed that the site was used by a variety of participants in CAS i.e. canoe, wave ski, surfboard, bodyboard and swimmers. The total number of bodyboarders recorded was equal to/or frequently exceeded, the total sum of swimmers in the water. For instance on the 30<sup>th</sup> July at 17.00 the lifeguards recorded 300 bodyboards in the water along with 200 swimmers.

Data collected by Carrick District Council lifeguards at Perranporth beach in 1999 showed that the site was used intensely by participants in surfing, bodyboarding and swimming. For instance on the 16<sup>th</sup> July at 14.00 60 surfboards, 42 bodyboards and 150 swimmers were recorded as being in the water. Windsurfers were also recorded as visiting the location sporadically.

Lifeguards at St Agnes in 1999 recorded heavy participant use of canoes, surfboards, bodyboards and swimmers as well as considerable use by sail/power boats and occasional use by wind surfers and jet-skis. The surfboard and bodyboard participants outnumbered those participants that were swimmers by a significant margin.

Observations made by local authority lifeguards in 1999 when compared to the records of Cornwall County Council Aerial Coastal Recreation Survey in 1976 show an extensive growth of CAS activities. Section 2.3.2 suggests that culture and sub-cultures that have associated music and fashion with CAS has evolved and this is nurtured by media. Therefore, it may be reasoned that tourism companies are using CAS as a mechanism for encouraging visitors and the following section will examine the relationship between CAS and the tourism industry.

## **2.8 CAS as a Component of the Tourism Industry**

The connection between sport and leisure is important because sport has provided the tourism industry with a process by which their catalogue of services can be extended. An evident and illustrative example of the intimate connection between the two is the Olympic games. This high-profile event attracts immense public attention and the tourism industry provides the necessary mechanisms for spectator attendance. In a similar way, tourism permeates many other types of sporting landscape and the interactions of tourism with the sporting landscapes promote 'sport' to a wider audience. Thus, tourism acts as an instrument to actively encourage 'the sport for all' initiative.

The relationship between sport and tourism is emphasised by joint policy statements of intent by the West Country Tourist Board and the Sports Council (Policy GP1 and GP2) :

“The West Country Tourist Board (WCTB) and the Sports Council (SC)(SW) recognise that close links exist between tourism, sport and active recreation in the region.” [and] “WCTB and SC (SW) will agree and issue a set of guidelines to be observed in linking sport and tourism activities more closely together” (WCTB, 1992: 3).

It is important for this study that the link between sport and tourism is clear as they contain a number of opposing fundamentals. As discussed earlier in Section 2.2 sport has been employed as a mechanism for personal development and is also perceived to contain a number of important social dimensions. In contrast tourism is multi-faceted and as a service industry it encompasses specific economic drivers that will be explored and discussed in Section 2.9.

Hence, it is important to the overall thrust of this study to be aware of these opposing elements when exploring the manner in which CAS has become a fragment of the Tourism Industry.

### **2.8.1 Development of the Coastline for Tourism and Leisure**

Water has been noted historically for its links with leisure pursuits, although initially these were not overall 'sport' related links. McCormack (1994) suggests that the coastal holiday was initially established as a health tonic for the prosperous, the therapeutic qualities of seawater bathing being first documented in 1753 by Dr Russell. The introduction of the Bank Holiday Act in 1871 furthered public interest in the seaside as a holiday destination.

The UK coasts quickly became a prominent part of the leisure industry, although before World War Two this was primarily paddling and beach related activities. Participation in CAS was slow to progress but, as stated in Section 2.4, it was CAS technical developments that served to bring about the radical changes that were required for increased participation in water-activities. These years produced new technology, which allowed aquatic craft to be constructed at lower costs. This factor, in conjunction with better standards of living, created the economic climate to encourage the public to participate in a number of coastal water-sports.

The 'sport for all' initiative by the Sport Council, together with positive media reporting, resulted in a dramatic turn-about in the population's perception of the types of activities that can take place in coastal waters. The implementation of Outdoor Education in the National Curriculum, and the popularity of Outdoor Management Programmes, served to highlight further the benefits to be derived from outdoor sporting activities.

The increase in public participation in CAS evident in the 1970s resulted in them being identified as containing 'special attractors' by the tourism industry. This was in conjunction with the public interest in outdoor activity centres that were providing for the first phase of convergence between CAS and the tourism industry.

During the 1980s and early 1990s, due to increased participation, further specific developments between CAS and the Tourism Industry have taken place. These types of affiliation can be clearly identified in the 1992 joint policy statements of the West Country Tourist Board and Sports Council where it was stated that "... they would encourage the development of joint management initiatives to improve facilities for water recreation." (WCTB, 1992 :5).

This statement of intent clearly identifies that CAS has indeed become a component of the tourism industry. This affiliation can produce specific problems due to the perceived polarisation of the interests that are associated with individual structures of CAS and tourism.

## **2.9 Impacts of CAS on the Coastline and Coastal Communities**

CAS is multi-dimensional and, like sport in general, contains not one social value but a number of alternative values. For instance, because economic value is a determinant for



growth, and because economic value can be ascribed to CAS, this study also considers the economic effects of CAS.

As discussed in Section 2.4 and 2.8 outdoor sports inclusive of CAS have been identified as containing special attractors. These special attractors are becoming increasingly meaningful to the rapid growth of tourism. The tourism industry is, in turn, important to certain regions where it can act as a catalyst for growth and development.

Tourism-related regional opportunities have been given emphasis in this work so that any contribution by CAS can be evaluated. It is critical that an understanding is reached of the distinct differences in the drivers associated with sport and tourism. Section 2.1–2.3 showed that CAS provides a mechanism for personal self-development and these personal motivators can be disrupted by external factors such as competition for reward. In contrast, tourism has an economic driver that is fuelled through the maximisation of competitive strategies. This has important implications for CAS because the economic drivers to maximise CAS participation associated with tourism are likely to produce negative effects, such as resource over-consumption. Therefore, the economic processes that link CAS and tourism must be discussed comprehensively.

### **2.9.1 Overview of the Tourism Industry**

Tourism is a powerful economic driver. For instance, the Wharton Economic Forecasting Association estimated that the gross global total output for travel in 1993 was near \$3.2 trillion (Forsyth, Dwyer and Clarke, 1995). The study also calculated that tourism expands at twice the pace of world GNP and 127 million persons are employed in the industry. For each £1 million of revenue, 20,000 work places are made available. Furthermore, the World Tourism Organisation (WTO, 1995) predicted that international travel will increase to involve 935 million people by the year 2010. This is double the number in 1993.

It is important that the term tourist is defined; this is because emphasis will be placed on CAS participants' contribution to this industry. The modern accepted definition was suggested in Rome in 1963, at the United Nations Conference on International Trade and Tourism when the WTO suggested that the word 'visitor' should be included into the tourism definition. This specific definition has been adopted for this study with an emphasis on regional movements as well as those that are international. Tourism may then be defined as:

“Any person visiting a country (region) other than that in which he has usual place of residence, for any reason other than following an occupation remunerated (*waged*) from within the country (destination) visited”  
(Theobald, 1994: 205).

Tourism has been described by McKercher (1993:18) to be comparable to an economic saviour, generating employment, income and tax revenue, and a catalyst for regional development. This growth and development is achieved by stimulating employment opportunities and therefore income. These two factors are of great importance and when combined they may trigger a multiplier effect which enhances the total economic benefit to a region. The increase of supporting infrastructure is also identified as a beneficial by-product of the tourism industry.

These related developments often complement regions and are perceived to contribute to improved lifestyles of local populations. There are also negative values attached to tourism. McKercher (1993) has identified eight, four of which have relevance to the current research.

- As an industrial activity, tourism consumes resources, creates waste and has specific infrastructure needs.
- As a consumer of resources, it has the ability to over-consume resources.
- Tourism is a multi-faceted industry, and as such, it is almost impossible to control
- Unlike other industrial activities, tourism generates income by importing clients, rather than by exporting its product (McKercher, 1993: 19).

### **2.9.2 Tourism and Activity Holidays**

As discussed in Section 2.2 outdoor activity centres are a link between economic processes and CAS as a focus for tourism related outdoor 'sporting holidays'. CAS maintains a very significant role in the perception of managers of these types of holiday centres. For instance, Mintel (1997) noted that the sales and marketing managers of specialist operators of themed/adventure long haul holidays believed that a growing number of people were becoming aware and interested in the alternative beach holiday. This alternative type of activity holiday is also defined by Mintel (1997) as a holiday in which the main purpose of the holiday, or trip away from home, is a sporting or otherwise physically active holiday.

Results from research by the United Kingdom Tourism Survey (UKTS) in conjunction with Mintel (1997) estimated that in 1997 a total of 13.2 million holidays were taken. Placing an economic value on this market, Mintel (1997) shows that activity holidays take a higher share of value than of volume – 16.2% of holidays, but around 18% of expenditure, which suggests that the domestic activity holiday market was worth £1.7 billion in 1997. Activity holidays include a number of different activities; therefore the above market must be broken down by type to assess the segments associated with CAS.

ACTIVITY HOLIDAYS	Long Holidays		Short Breaks		Total	
	000	%	000	%	000	%
Walking, Hiking, Hill & Fell Rambling etc	1,300	25	1,200	23	2,500	24
Swimming,	900	17	1,100	21	2,000	19
Sailing, Boating, Canoeing, Water sports	1,000	19	800	15	1,800	17
Fishing, Hunting or Shooting	500	9	600	11	1,100	10
Golf	300	6	300	6	600	6
Cycling	250	5	250	5	500	5
Climbing	250	5	250	5	500	5
Other Sport or Activity	750	14	750	14	1,500	14
<b>TOTAL</b>	<b>5,250</b>	<b>100</b>	<b>5,250</b>	<b>100</b>	<b>10,500</b>	<b>100</b>

Table 2.4

The Domestic Market, by Type of Activity Holiday, 1997 (Mintel, 1997: 15)

Table 2.4 shows that swimming takes up some 19% of the total market and that sailing, boating, canoeing and other water-sports take up some 17% of the total market. Placing these activities together, they made up 36% of the total activity holiday market. This indicates that CAS is a popular feature of the leisure activity sector. However, this does not include sea-angling because fishing is placed with hunting and shooting rather than with water sports. Mintel (1997) also noted that each year 10 million ordinary holidays involve swimming and a further 1.8 million involved some type of aquatic-craft. The results of a further survey based on 1,014 adults carried out by Mintel (1997) showed that there is a 5% increase in those interested in taking part in CAS related activities in comparison to 1993 data.

The West Country Tourist Board (1993) (WCTB) produced a detailed report, in which a continuum of interest in windsurfing, sailing, sub-aqua diving and canoeing was noted and which stated that emphasis should continue to be placed on watersports.

The activity holiday sector is only one element of the total number of possible tourism-related economic drivers that can be associated with CAS. Special events, which include

CAS, constitute another way in which the tourism industry acts to attract visitors to a region. The world water-sports festival, which was held in Cornwall in 1998, is an excellent example of how regions may benefit economically from these types of CAS related events. As an example, seven of the smaller festival CAS events of the World Watersports Festival are listed below along with their associated volume and value of trips:

**Cornwall Land Yachting Regatta.**

55 non-local participant days @ £75 daily spend, plus 200 spectator –days @ £11.

Total = £6,000

**International Sand & Surf Festival.**

900 non-local participant days @ £72 daily spend, plus 16,000 spectator –days @ £11.

Total = £241,000

**Royal Yachting Association (RYA.) National Youth Championship.**

775 non-local participant days @ £75 daily spend, plus 1,000 spectator –days @ £11.

Total = £69,000

**Atlantic Alone Feeder Race.**

550 non-local participant days @ £89 daily spend, plus 4,300 spectator –days @ £11.

Total = £96,000

**World Skiff Championships.**

575 non-local participant days @ £99 daily spend, plus 5,000 spectator –days @ £11.

Total = £112,000

**Surf Lifesaving Fun Day.**

20 non-local participant days @ £75 daily spend, plus 4,000 spectator –days @ £11.

Total = £46,000

**World Wave-Ski Championships.**

550 non-local participant days @ £48 daily spend, plus 2,300 spectator –days @ £11.

Total = £51,700

(Exeter University, 1999)

The impact of the Falmouth Cutty Sark Tall Ships Festival highlights the economic significance of special events associated with CAS. The total direct expenditure generated by the Tall Ships Festival amounted to £24 million and, when including the multiplier effect which accounted for a further £7 million, the total is increased to £31 million. This is estimated by Tourism Associates (1998:7) as equating to 500 full time jobs overall.

### 2.9.3 Tourism in Cornwall

For the purpose of this study, and due to the magnitude of the South West coastal belt, Cornwall has been selected to highlight current tourism trends and how CAS as a tourism mechanism can help to expand the local economy.

The coastline of Cornwall is approximately 450 km in length and incorporates 26% of England's Heritage Coast and 17% of its bathing beaches. Because the Cornish coastal belt incorporates both north and south facing coastal arenas, a full range of CAS related activities is encouraged. Results of a questionnaire survey of 679 visitors to Newquay, Cornwall, carried out by the Tourism Research Group, Exeter University in 1997, showed that 15.9% of respondents agreed that the principal reasons for choosing Newquay as a destination were the beaches, sea and surfing, (Tourism Research Group, 1997). This was an increase of 8.5% on the results of a similar questionnaire carried out in 1996.

The Economic Impact of Tourism in Cornwall Report developed by the West Country Tourist Board (WCTB) in August 1997 (revised in 1998) employed the Cambridge Economic Impact of Tourism Model; this model allows for analysis of linkage and multiplier effects. To highlight the economic significance of tourism to Cornwall the details shown below have been extracted from this report.

- It is estimated that Cornwall receives 4,135,000 staying visitors, of which 92% come from within the UK. Visitors are primarily on holiday (84%) of all visitors. Others are on business trips or visiting friends.
- Expenditure by staying visitors in Cornwall amounts to over £800 million (1996 prices), mainly from holiday visits. Visitors from overseas contribute 12% of the direct spend.
- Total direct expenditure by all visitors (i.e. day and staying) amounts to £943 million, of which £326 million accrues to the accommodation industry, £258 million to catering and £152 million to retail.
- It is estimated that there are over 21,000 Full Time Equivalent jobs (FTEs) directly supported by tourism expenditure in Cornwall. 44% are in the accommodation sector and 31% in restaurants, pubs and other catering.

- It is estimated that the linkage and multiplier spend total £496 million in Cornwall, which supports 10,000 FTE linkage jobs in the county. Adding the estimated direct, linkage and multiplier spends gives a total of £1.4 billion resulting from day and staying visitor activity.
- In terms of actual jobs, it is estimated that 42,586 people are supported through the tourism industry in Cornwall, 73% of them directly. 47% of the total are in accommodation, 31% in catering, 9% in retail, 5% in attraction/entertainment and 4% in transport/travel.
- These actual jobs form an estimated 19% of the actual jobs in the county. On this basis, tourism is the largest employer in the county. Economic Impact of Tourism in Cornwall Report, (WCTB, 1998).

The full economic value of CAS participants, or more specifically their associated spending, has yet to be adequately accounted for in the South West. However, this spend constitutes a significant proportion of the area's total income. Table 2.6 emphasises how the tourism industry generates income and other benefits for Cornwall. Because of this CAS is recognised as a positive mechanism for this particular industry. However, there is another economic benefit associated with CAS generated by the marine industry. This industry relates to income earned through a combination of purchases, hire and repair of CAS equipment.

#### **2.9.4 The Marine Industry and CAS**

Having overviewed the impact of the tourism industry on Cornwall the evidence throughout this study suggests that public interest in CAS is increasing. However, consideration must also be applied to the UK Marine Industry. Income earned is from high value added industries such as surfboard and yacht manufacturing and associated service industries. Very little income is generated from primary industries.

The Australian Marine Industries and Sciences Council (AMISC) define the marine industry as containing four categories. One of these is 'marine related equipment and

service providers' and it because this category includes tourism and leisure it is particularly relevant to this study.

Mintel (1997) noted that there has been no mechanism in place to collect data within the marine boat industry and this has resulted in problems with making annual comparisons. The British Marine Industries Federation (1999) estimates that the total UK boating industry turnover is in excess of £2 billion, with major boatbuilders exporting some 50% of production. Furthermore a report provided by Panel (1997) showed that marine leisure was worth around £8 billion per annum and was the second largest UK marine industry after offshore oil and gas.

The second-hand boat market is also a mechanism by which the maritime economy can be boosted, but due to the majority of transactions being carried out privately there are problems in attempting to identify actual figures. In 1994 the British Marine Industry Federation (BMIF) suggested that the value of the retail trade in second-hand boats (i.e. sales through boatyards, retailers and brokerage) was around £9 million. This information is furthered by a British Waterways survey that estimated that two thirds of boat purchases involve second-hand craft and 76% of first time boat buyers are buying from this sector (Mintel, 1997).

The marine industry is unique because it is extremely diverse. Types of skills required by this industry range from many different levels of management, IT and design skills through to specialised skills such as CAD, boat-building, sail-making, electronics, plumbing, welding, engineering and many others. Hence, the sector provides a whole range of regional employment opportunities. For instance, it is estimated that approximately 17,000 are employed in the sector (0.8% of South West employment), making up 15.4% of the sector's total employment and that the building and repair of pleasure and sporting boats



accounts for 25% of employment in the South West. (Beer, Ingram, Bryant, Evans, and Lupson, 2002)

The marine industry is often thought of as primarily boat-orientated. However other related businesses should not be overlooked as they also contribute quite substantially to the overall dynamics of this sector. For example, the South West based wet-suit manufacturers Gul and Sola provide high incomes. Browning (1998) states that Gul International has an annual worldwide turnover of £30 million and this has grown from a small business employing 2 persons to a high profile company employing over 200 people. Furthermore,, Sola has developed in a similar fashion and at that time had a turnover of some £3.5 million. BMIF (1999) suggest that, despite the existence of large operators such as Princess Yachts (formally Marine Projects) that focus on international markets, the mainstay of the UK maritime industry is made up of small and medium sized enterprises, employing between 2 and 50 people.

CAS also creates other benefits for a region such as the regeneration of disused industrial sites through leisure related maritime development plans that may include marinas, ports, harbours, and water edge access points. These types of developments can bring about vital change for local communities. The provision of infrastructure such as roads and amenities encourages investment from private bodies and this can cause a knock-on effect that will create further development and therefore further work opportunities.

## **2.10 Summary**

This chapter has reviewed some of the social values that are attached to the coastline and also the ways that the coastline provides a medium for recreation and leisure activities. It has indicated the economic benefits associated with these developments and has shown

that the special values associated with CAS are becoming increasingly important for the development of the tourism industry in Cornwall. It is evident that the economic benefits to be derived from CAS are important and that there is a landscape of opportunities available to regions that possess the correct conditions for marketing and promoting CAS. The example of Cornwall furthers this argument by demonstrating how the tourism industry has developed to become the main economic driver of the region and how CAS contributes positively to this development.

The sustainable management of CAS is therefore vital for an upward growth in CAS participation to be maintained and for economic benefits to the coastal regions to be optimised. Section 2.3 describes CAS as an adventure related activity in that it contains unique elements associated with high-risk sports. Furthermore, it is evident from Section 2.3.1 that those who take part in these types of high-risk sports have a profile with multiple characteristics. For instance, they are typically motivated by intrinsic drives that derive either from the motive to achieve success or to avoid failure. Thus each individual may have a different perspective of risk. Confounding these observations is the interaction of culture and the way in which cultural relationships evolve under certain conditions and then present themselves as social power sources (Section 2.3.2). Section 2.7 discussed the upward growth of CAS and showed the shift of participant interest from 'play equipment' to dynamic activities such as surfing, sailing etc

Section 2.5 identified 12 individual CAS and condensed these into categories based on the power source, these were, fuel, wind, wave and human. Each of the individual activities was overviewed and their technical details discussed. This showed that many of the craft generated specific problems. For instance, in Section 2.5.1 Cox (1999) noted that excess speed accomplished with auxiliary power sources was a cause for concern in the navigation of a sailboat in a marina because the reverse gear of the engine is unreliable,

however, it is the main method of impeding the forward motion of the craft. Additionally Cox highlighted how some navigational lights are potentially hazardous because many sailboat skippers use incorrect lights under power at night. Section 2.5.3 showed that the size, shape and weight of the PWC allowed for informal coastal access and this coupled with high speeds has caused calls for safety awareness. In Section 2.5.6 Saunders (1994) noted that a drift dive diver is 'out of control' and dependent on the current for direction and in a beach dive, the diver may have difficulty in getting clear of the surf-line as the turbulence associated with waves may knock the diver down, especially if the weight of equipment affects the diver's ability to manoeuvre and reduce vision. In Section 2.5.7 Foster (1997) noted that the shape of a kayak can result in low stability and this will be 'less forgiving for the beginner'. A long comparatively un-maneuvrable sea kayak has considerable momentum on a wave and participants should therefore not practise surf technique on a beach in places where other water users could be run down. Section 2.5.4 showed that a Malibu [*Longboard*] rider caught inside the breaking surf will get washed a long way backwards. These technical problems are possibly manageable by the individual CAS participant however the upward participation trend indicates that it is probably unlikely that CAS activities will take place in isolation and hence participant difficulties are likely to have some impact upon other activities.

To further this study, therefore, it will be necessary to explore the current management systems that are employed to direct CAS.

## **CHAPTER THREE: ISSUES AND MANAGEMENT ASSOCIATED WITH CAS**

### **3.0 Introduction**

The previous chapters have outlined the way that Coastal Aquatic Sport (CAS) has evolved to become embedded in a network of issues. For example, Section 2.3 identified the social and psychological benefits to be derived from CAS. Although these might be considered peripheral to management issues they have emerged as having a particular relevance to the matter of this chapter because these strands of CAS have led to the emergence of specific behaviours and reactionary factors. These aspects embrace sport power cultures and incidentally provide a mechanism by which conflict related behaviours are induced. Therefore this chapter will explore the term of conflict and examine some of the causes for its occurrence in a CAS environment. For instant Section 3.1.1 will examine the compatibilities of CAS craft in relation to attainable speed and methods of propulsion and Section 3.1.2 will discuss problems associated with CAS multi use locations.

This chapter will also begin to unravel UK coastal planning and policy and examine some of the issues that have produced the complex management configurations. For instance, the dynamism of the coastal zone in relation to the plethora of stakeholders that may have economic, social or environmental related interests. In addition to the above issues there are also clear links between CAS and Government, National and Local statutory agencies which embrace CAS management and control mechanisms. Hence the examination of underpinning management frameworks is critical for the development of this study because the occurrence of conflict is unlikely to exist at locations where good management practices are promoted.

### 3.1 Conflict of Interest

The term 'conflict' is defined by De Bono (1985) as:

"A clash of interests values, actions or directions. Conflict refers to the existence of that clash. The word conflict is applicable from the instant that the clash occurs. Even when we say there is a potential conflict we are implying that there is already a conflict of direction even though a clash may not yet have occurred".

Linked definitions from the same source are:

Confliction: "Confliction is the process of setting up, promoting, encouraging or designing conflict . . . confliction is meant to refer to a deliberate process. It is the effort to establish a conflict".

De-confliction: "De-confliction is the opposite of confliction. It refers to the designing away or dissipation of the basis for the conflict. De-confliction does not refer to negotiation or bargaining or even to the resolution of conflicts. De-confliction is the effort required to evaporate a conflict. Just, as confliction is the setting up of a conflict so de-confliction is the opposite process: the demolition of the conflict" (De Bono, 1985:5).

In general, conflicts arise because although people interact in the same situation, they can see that situation very differently (De Bono, 1985). The CAS environment produces a multitude of situational events from which conflicts often emerge, for instance, the incompatibility of craft types. Good management policies would identify and address such instances individually. In Section 2:5 CAS craft types were classified by power source (human, wave, wind and fuel) and many conflicts are linked to the existence of these different power sources partly because the individuals using them in a multi-powered CAS environment see the water-space and its use from very different perspectives.

### **3.1.1 Incompatibility of Craft Types**

Section 2.5 described the different forms of CAS in detail and the maximum attainable speed of each CAS was identified as a significant aspect of difference. The maximum achievable craft speed and craft acceleration capacity are two of the properties that can be used to categorise ‘maximum desirability’ requirements of CAS participants’ individual operational water-space. Self-evidently, a powerboat travelling at 50 knots will require more space to navigate than a swimmer.

Figure 3.1 shows a hierarchy of maximum attainable speeds for different CAS. Fuel powered CAS are at the top of the scale followed by wind, wave and finally human. Unsurprisingly, those craft capable of greater speeds require more water-space than those of lesser velocity, not least because of the space required to halt the craft. Although they have the highest attainable speeds, fuel powered craft are the most versatile CAS craft because they are not dependant on natural sources of energy for their continuous forward thrust and they may therefore enjoy unimpeded open water navigation limited only by the quantity of fuel carried.

### Attainable Speeds of Individual CAS

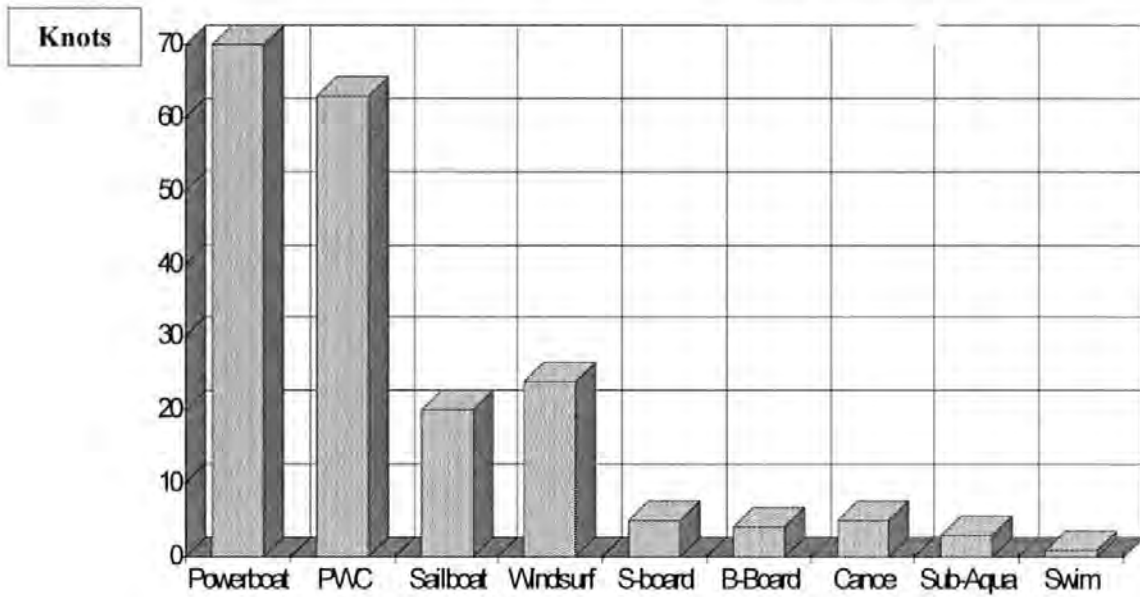


Figure 3.1 Attainable Speeds of Individual CAS: Pilot Study (1998) Chapter 4 of this Thesis

The fuel-propelled craft's continuity of forward thrust has created concern amongst water safety managers especially when these craft are co-located with other craft. The launch of the Maritime and Coastguard Agency (MCA) in 1998 emphasised this and Garner (1998) noted that, of the 12,000 incidents reported to the coastguard in that particular year, a large number had involved personal watercraft. Garner (1998) also noted that, for a number of incidents involving the first PWC experience of a participant, a collision resulted which caused the death of the rider or pillion passenger. For instance, a ten year-old boy become seriously injured when the PWC he was riding collided with a powerboat (Sullivan, 1998).

Following a similar PWC fatality Sullivan (an advanced RYA PWC instructor) highlighted the incompatibility of some types of CAS by suggesting that it was 'possible to run a swimmer over before you actually see them' (Sullivan, 1998). He also refers to the similarity of PWC to 'road' motorcycles and commented that "pedestrians and motorcycles

do not mix” (Sullivan, 1998). These types of PWC problems illustrate the difficulties of CAS multi-use single-sites.

### **3.1.2 Incompatibility of CAS Multi-Locations**

Data collected by Carrick District Council lifeguards during May and September 1999 recorded a number of CAS conflicts and confliction type incidents linked to fuel-powered CAS. Some generated concerns that fuel powered craft were navigating too close to the coastal fringe. For instance, Gyllyngvase beach lifeguards recorded 4 -5 speedboats and water skiers coming in too far and that these activities required verbal warnings by the lifeguards (25.6.99). Lifeguards also recorded PWC problems that were perceived as endangering swimmers (14.7.99) [and] having to call out the Harbourmaster to deal with ‘dangerous jet skiers’ (16.7.99). The Penwith Council Lifeguards that were operating at the Marazion coastal site also recorded similar types of conflicts and possible conflictions (detailed in Chapter 4).

These extracts from the lifeguards’ records show that in some cases users of fuel powered craft had disregarded advice. The Strategic Guidance for the Solent (detailed in the Solent Forum (2001)) evidenced an increase in ‘new type’ fuel powered craft navigating the Solent and stated that the sudden growth had produced conflicts with established user groups, local residents and the environment. Motorised recreational craft provided the main CAS concern in comparison with other recreational activities on the Solent.

Other craft also create conflict and conflictions. For instance, Marazion lifeguards recorded a number of incidents involving wind-surfboards such as ‘wind surfers needed to be told to stay within flagged area’ and ‘bathers had to be carefully watched due to intensive windsurfer activity’. On another occasion jet skiers needed to be told not to



launch from the beach due to heavy congestion with other water users (14.8.99). The term 'congestion' has an interesting parallel with urban traffic issues.

### **3.2 Impacts of Culture**

Long and short surfboarding and body-boarding are wave powered and these types of CAS also produce both conflict and confliction. This factor is intensified by the presence (Chapter 2) of a prolific and very visible power culture. A statement from the British Surf Association administrator Colin Wilson and cited by Webb (1995) suggested that surfers use their surf-wear to differentiate themselves from the rest of the 'hoi polloi' on the beach; further emphasising the existence of strong cultural characteristics associated with wave-propelled activities. Surfboarding is one of these power-cultures and appears as particularly problematic. Farmer (1992) noted that:

"The problem with classifying surfing as a subculture or a counterculture is that it implies that surfers are well organised and have common goals and a common ideology. For these reasons, surfing appears to be a semi-deviant scene rather than a subculture or a counterculture" (Farmer, 1992:269).

Harambalas (1985) suggests that deviance breaks social norms and values, which is in contravention of the functionalist's emphasis on the significance of shared norms and values as the basis for social order. Irwin (1973) suggested that during the 1980s surfboarding behavioural patterns were largely determined by a purposive desire to display disregard for the standards of conduct of conventional society. This becomes compounded because the cultural framework provided by commercial surfing agencies (some innocuously) also identifies the surfboarding culture as a semi-deviant scene. (A scene in this case is defined by Irwin (1973) as referring to a configuration of behaviour patterns which is well known to a group of actors.) For instance, in a statement from the surf

company Mambo the licensee Spider states that “ We like to take the piss and poke fun at society” [and] “Surfing gives you the chance to be anarchic.” (Webb, 1995). This type of address was also communicated to surfboarding participants through the Mambo manifesto used on surfboard clothing in 1995, which suggested, “. . . the shining path of youth culture will run crimson with the blood of our enemies!” (Webb, 1995). The cultural exchanges made through these types of communication are important to this study because Douglas and Isherwood (1996) describe ‘symbolic goods’ as:

“Goods are neutral, their uses are social; they can be used as fences or bridges. . . The symbolic value of objects in the ‘information system’ is not inherent in the objects themselves. . . Value is something conferred by human judgements. . . Goods do not communicate by themselves, they communicate ‘like flags’ and thus require the active agency of human subjects.”

(Douglas and Isherwood (1996) (cited in Storey, 1999))

Storey (1999) further suggests that consumption uses goods to make firm and visible a particular set of judgements in the fluid processes of classifying persons and events and in this way, cultural consumption is a ritual activity. Thus, the Mambo ‘symbolic goods’ communications exemplify ‘symbolic aggression or hostility’. These types of symbolic communications have been encouraged to develop as one principle of the surfboarding cultural practices. The cultural deviance ascribed to surfboarding has also been noted by Neustatter (1997) to be attractive to daredevils with kamikaze pilot mentality.

The term ‘aggression’ for the purpose of this study has been defined by Geen and Donnerstein (1983) as behaviour that results in personal injury and physical destruction. That injury may either be physical or it may involve psychological impairment through disparagement and abusive exercise of coercive power.

### 3.3 Aggression

The results of the 1998 pilot study showed that whilst participating in their CAS activity 71% of respondents had encountered verbal hostility, 53% had encountered hostile gestures and 8% had encountered actual physical hostility. Furthermore 40% of the respondents agreed that they themselves had demonstrated some form of hostility to another CAS participant whilst they had been taking part in their activity.

Wave powered surfboarding has also been associated with many 'conflictions'. These encompass three types of hostility: verbal, gestural and actual physical. For instance, Alderson (1996a) discusses how surfers contemptuously described participants in other wave powered activities such as bodyboarders as 'spongers' or 'speed bumps' and kneeboarders as 'cripples' and kayakers as 'armchair surfers'. Colin Wilson, the director for BSA was cited by Reed (1995) as commenting that the popularity of body/boogie boards and the increase use of wet suits had enabled your average 'Joe' to get in to the surf and then 'get in the way'.

Reed (1995) noted that incidents involving hostile interactions between wave powered activities were prolific both nationally and internationally. Bilbray (1995) described some of these types of hostilities as "aquatic versions of gangs and their territorial battles" (Bilbray, 1995 (cited in Reed, 1995)). For example, hostilities were observed by Reed (1995) to take place between Hawaiian natives and Americans, traditional longboarders and 'upstart' shortboarders and between local beach denizens and visitors. Bilbray's use of the term 'territorial' provides a catalyst for further discussion and its use will need to be defined. Simply, the term territory is an area of space, whether of water or earth or air,

which an animal or group of animals defends as an exclusive preserve Audrey (1967). However, it has ramifications that are more complex.

For instance, perceptions of territory often induce conflict. One such territorial confrontation resulted in a longboard participant being taken to hospital with 15 stitches in his face and a dislocated shoulder after an attack by two shortboard participant (Reed, 1995). Alderson (1996b) also reported that one local surfer in California had related - anonymously - how he used to put razor blades on the nose of his surfboard to keep people away from 'his break' and how he had been jailed five times for assault and battery, vandalism and car theft, all of which were surf related. The surfer also stated that all the surf-spots were taken and to protect them local surfers have indulged in 'semi-drowning', car theft and car torching, breaking boards and stealing wetsuits.

The popularity and increase in number of body boarders in relation to other wave powered CAS participants have furthered these types of conflict. Alderson (1996b) suggested that, because there are not enough waves to go round, surfers are beginning to vent their wrath on the 'boogie-boarding upstarts'.

The deviant subculture described earlier suggests that the conflict may have developed as a natural process of competition. For instance Edwards (1962) suggests that, of all the conventions which nature has evolved, that of substituting competition for territory in the place of competition for food is most ingenious. However, this argument is opposed by Storr (1968) who suggests that the body has a co-ordinated physico-chemical system, which subserves emotion and aggressive action and is easily brought into action by the stimulus of threat and/or frustration. Moreover, Storr (1968) emphasises that, because of the way in which the body works, the aggressive response tends to have an 'all-or-none quality'.

The stimuli of threat and frustration may be perceived as pertaining to the 'certain conditions' discussed earlier in Chapter One. For instance, Coser (1966) suggested these types of stimuli were most likely to occur when there is a decline in the perceived legitimacy of the social distribution of resources. This would result in individuals eventually cohering and becoming a power or 'status' group. It is then that behaviours such as territoriality, hostility or defence mechanisms are most likely to emerge.

Section 2.1 discussed the way that man ascribes value to the natural environment causing that environment to become a resource and ultimately a commodity. In CAS the human value resource is the coastal aquatic environment, therefore if Coser's suggestion is correct then it may be concluded that certain CAS resources may currently have become over-consumed or overcrowded and because of this conflict is occurring. Furthermore, to support this assumption Redclift (1987) (Section 2.1) noted that one type of human conflict associated with a natural environment could be linked to the sphere of consumption.

### **3.4 CAS and Issues of Overcrowding**

The subject of overcrowding is problematic. For instance, the 2000 Dorset Coast Forum Notes on Recreation clearly state that increasing participation in CAS results in more safety issues and that this has an effect on the quality of the recreational experience. The near shore areas of Swanage, Studland and Poole Harbour were all recorded as having incompatible activities taking place at the same time and as being overcrowded at peak times, resulting in accidents, near misses and nuisance.

The results from the tentative enquiries made by the 1998/1999<sup>1</sup> pilot investigations showed that 24 of the 28 of CAS respondents had been involved in an impact with another CAS craft whilst participating in their activity. However, the reporting of those incidents to authoritative bodies had been minimal. These initial enquiries were refined during the main fieldwork by an investigation into how impacts affected the CAS respondents' perception of both quality and risk. Data indicate that 21 of the total of 28 respondents perceived that interaction caused a reduction in their quality of experience. Furthermore, 24 respondents perceived that CAS interaction heightened their perception of risk with 13 of the 24 clearly defining overcrowded conditions as a contributory factor. Additionally, 23 had encountered hostility and 18 indicated that other CAS participants/craft being 'in the way' would evoke a hostile reaction, while 14 placed emphasis on 'other CAS participant's attitude' as a provocation.

The discussions in Section 2.9 made comparisons between the Aerial Coastal Recreation Survey for Cornwall County Council' (Barrington, 1976) and the recorded observations made by professional lifeguards in 1999. The actual growth in CAS activity is dramatic because this growth is not confined to the sum total of participants but also includes the different types of activities that are currently on the coastal fringe. Support for these observations comes from the recordings made by the lifeguards in 1999 that show that during the summer months, where visitor activities are intensive the number of surf craft warnings is especially high. From this, it may be concluded that without the provision of warnings impacts would have occurred.

It is evident from the previous chapters that CAS makes a valuable social contribution and CAS activities must be encouraged. However Sections 3.1 – 3.4 show that the growth of

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<sup>1</sup> 1998/1999 Pilot Investigation is discussed in Chapter Four and Chapter Five.

CAS participation is at a stage where the consumption of CAS resources is reaching saturation. Because of this confliction and conflict occurs. Therefore it will be important for this study to review the way in which coastal planning and policy has evolved to control and manage CAS resource use.

### **3.5 Historical Overview of the UK Coastal Planning and Policy**

The coastal fringe is dynamic by nature and creates circumstances that demand that planning procedures be executed with great prudence. Moreover, planning and policy issues are consistently criticised by external bodies as being 'flawed' due to a 'lack of foresight' (Environment Committee, 1992). This is partly because the issues associated with the entirety of bodies with coastal fringe management roles are complex; and this has woven an intensive and intricate mesh which has ultimately constrained further development of the coastal zone. Before addressing the contemporary issues associated with coastal and marine policies, a brief historical overview of the 'management' of ocean 'issues' is given so that the backdrop to the current situation is established. This gives a starting point from which an understanding of the processes associated with coastal and maritime management can be gained.

Cuyvers, (1984) notes that the international Law of the Sea (LoS) originates in the Mediterranean and is primarily the 'freedom to navigate.' This freedom of the seas doctrine could absolve CAS from many legislative mechanisms; however, socio-economic development increased socio-ocean interactions and this in turn created a need for more advanced measures of control. This progression has particular significance for CAS.

Cuyvers, (1984) also noted that the Third Law of the Sea (1973 – 1982) emphasised the need for jurisdictional zones. The important development from these LoS proceedings was the establishment of state sovereignty and jurisdiction over territorial sea. This is measured 12 nautical miles from the low-water mark of the coastal fringe and this may be considered as the main impact zone for CAS.

### **3.6 Government, National, and Local Statutory Agencies and their Relationship with CAS Management and Control Mechanisms**

There is a noticeable league of marine-interested bodies in the UK coastal and maritime operations. This league of interests becomes extremely complicated as it expands, because each 'interest' has within its perceived field of operations the inclusion of 'other bodies' that carry out procedures. For instance, the Government Strategy for Sports 2001 prepared by Department for Culture, Media and Sports (DCMS, 2001) identified schools, Local Authorities, communities, National Governing Bodies, administrative bodies, sports charities and equity groups as key interest groups. The 'league of interests' is, therefore, one of the primary causes of the multiple management structures associated with the UK coast and the complications associated with them.

There are three departments of government that have been identified by this study to be relevant to CAS. These are:

- The Department for Culture, Media, and Sport (DCMS)
- Department for Transport (DfT)
- Department of the Environment, Food, and Rural Affairs (DEFRA)

However, because the 18<sup>th</sup> century perception of the 'ocean as a perfect and absolute blank' has permeated the UK policy and planning procedures over the last seventy years, UK coastal management operations have developed in a passive and reactive manner.



Therefore, it is important to examine the hierarchy of CAS management structures and the types of communication systems that influence and are directly relevant to CAS.

It is noted by the Department of the Environment (DoE) (1996a) (now known as DEFRA) that:

“Local Authorities are key bodies, as above mean low water they have the powers to control the development and use of land under the Town and Country Planning Act 1990. A general responsibility for the amenity of their areas makes them central to all aspects of environmental protection as it applies to the coast. They prepare Local Agenda 21 statements and local Biodiversity Action Plans and will be partners in many agencies’ activities” (DoE, 1996a).

Although Local Authorities (LA) hold the primary key to coastal management structures, Government Departments such as DEFRA<sup>2</sup> and DfT<sup>3</sup> along with other agencies, such as the Environment Agency, English Nature, the Countryside Commission, Sports Council and the Crown Estate Commission are also involved. Interest groups also have influence and these include the Marine Conservation Society, Royal Society for Protection of Birds, British Marine Industries Federation and the Central Council for Physical Recreation.

### **3.7 Central and Local Authority Powers**

LA fundamental responsibilities are related to planning and legislative procedures for the control of CAS activities. These responsibilities are guided by central government and are incorporated within the Town and Country planning procedures as Bylaws. Many aspects of enforcement and planning associated with the coast are the responsibility of the LA and

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<sup>2</sup> Incorporating the former Ministry of Agriculture, Fisheries, and Food (MAFF)

<sup>3</sup> Incorporating the former Department of the Environment, Transport and Regions (DETR)

feature prominently in the government's response to the recommendations of the 1992 Environment Committee report. It is important for this work to outline the operation of the Town and Country planning system because this ensures that issues relevant to CAS can be understood in the appropriate context.

### **3.7.1 Town and Country Planning**

Town and Country Planning devolves from central government and it encapsulates a main element in the guidance of overall planning procedures that involve or affect CAS because they are dependent on land-based access and facilities. The system is limited, complicated and extends, with the exception of certain circumstances, only to the low water mark. However, one must consider that planning and development on-shore can have significant impact offshore.

Taussik (1993) indicates that the central government policy direction, which consists of non-statutory regional and strategic guidelines, provides the framework for the UK planning system, via local statutory structure plans. The system can be perceived as somewhat cumbersome because it is distant from the grass roots level. Generally government guidance and direction is issued by the DfT and DEFRA and is considered by Local Planning Authorities (LPA) in the form of Planning Policy Guidance (PPG) notes.

### **3.7.2 The Sustainability of UK Coastal Management**

It was global issues such as climate change and the acknowledgement of factors relating to 'sustainability' that heightened the attention of the UK government to the complexity of issues that were emerging from the coastal fringe. Perhaps the most radical prompt for the creation of a divergent UK management approach to the coastal fringe was the 1990 publication of the Marine Conservation Society (MCS) and World Wide Fund for Nature (WWF) proposal for a UK Coastal Zone Management Plan. The purpose of the report was

for discussion to be stimulated and for detailed attention to be given to the 'current ordering' of the coastal terrestrial fringe. After this initial MCS/WWF proposal, a further report (Environment Committee, 1992) emphasising the need for a National Coastal Strategy, was written for the UK Government by the Environment Committee (1991-2). This stated that:

"... coastal protection, planning and management in the UK suffer from centuries of uncoordinated decisions and actions at both national and local levels. We found that there were inadequacies in legislation, anomalies in the planning system, a lack of central guidance, and overlapping and conflicting policies and responsibilities (and in some cases a lack of action) among a host of bodies, with poor co-ordination between them." (Environment Committee, 1992:xi)

CAS was identified in both the MCS/WWF and the Environment Select Committee recommendations as an area for concern and the relevant responsibilities and functions of LA were highlighted for special attention.

In response to the 1992 Environment Committee report, the UK Government made a commitment to further the management of the coastal zone within a national policy framework and to take account of the interactions between the landward, seaward and inter-tidal elements of the coastal zone (DoE, 1993a). This clearly encompasses the specific areas in which CAS operates.

The report stimulated the UK government to respond positively with an environmentally driven consultation document, Planning Policy Guidance Note 20 (1992) 'Coastal Planning' (DETR, 1992). PPG20 relates directly to CAS and contains important elements such as encouragement for LA to prepare both development and management plans for the coastline and estuaries (DETR, 1992). Paragraph 4.14 of PPG20 states that structure plans

should identify the key coast-related policy issues and provide the policy framework, including the general areas over which such policies should operate.

Also within the Planning Policy Guidance Notes (DETR, 1992) are supplements to existing PPGs that incorporate issues relevant to coastal activities. Planning Policy Guidance documents encompass many areas. For instance, PPG17 provides guidance on sport and recreation and is relevant to CAS because it emphasises the need for harmonisation of recreational activities on the coastal zone including CAS-related infrastructure development “ . . . imaginative re-use of . . . disused commercial docks and redundant agricultural land in proximity to . . . tidal water, . . . without undue detriment to local interest or the natural environment.”

This PPG17 coastal supplement statement clearly advocates an increased number of moorings and better access to the coastal fringe and thus PPG17 encourages the development of CAS. However, Paragraph 56 in PPG17 provides only weak general guidance on CAS which was noted by the DETR as being ‘inadequate’. The DETR also suggested that LA should be applying sustainable development principles, channelling demand to the least vulnerable locations and promoting shared use of resources.

PPG5 describes the creation of Simplified Planning Zones (SPZ). These zones are specifically regulated, and allow for some developments to take place over short time periods (10 years) to create investment opportunities for the tourism industry (DETR, 1998).

PPG11, Regional Planning, stresses the need to “Examine the regions’ key sports and physical recreational resources, including those assets based on natural features such as

mountains and estuaries" (DETR, 1998). This will be important to this study because CAS uses these types of natural resources.

Two further consultation documents, 'Managing the Coast' (DoE, 1993) and 'Development below Low Water' (DoE, 1993) indicated that satisfactory arrangements were already in place for the management of the coast. These reject the Environment Committee (1992) suggestion of an integrated approach and the extension of the planning framework below low water (Ducrotoy and Pullen, 1999).

The document "Managing the Coast" (DETR, 1993) suggested that all types of CAS provisions should embrace the voluntary and self-regulation approach, which includes zoning, although the document acknowledges that there are limits to this approach. The document also suggested that the sea outside local planning authority control (low-water) contained few conflicting uses.

Discussion and debate of the two 1993 documents Development below Low Water and Managing the Coast led to the production Policy Guidelines for the Coast (DoE, 1995b) which were intended to act as a foundation for contemporary coastal management. The Department of National Heritage, the Sports Council, Countryside Commission, National Rivers Authority and Local Authorities were identified as the vehicles for the promotion of coastal sport and recreation. However, specific CAS representation and practical management through the promotion of 'Sports Codes of Practice' was allotted to national governing bodies (DoE, 1995a). It is evident that the benefits to be derived from tourism had been identified by the guidelines because they stress the importance to coastal communities of the economic benefits to be derived from CAS. Hence, because of their links to coastal economic development, the CAS Sport Codes of Practice (SCP) have great relevance to this study and their role needs to be accommodated in the research design.

DoE's 1995 Policy Guidelines document also repeated some of the guidance presented in PPG20 (1992) by suggesting that activities should be 'appropriate to location and could be clustered'. Specific reference is also made to conflicts of use: "Where sport and recreation on the coast give rise to conflicts of use, relevant authorities and bodies should seek to reconcile these through appropriate management measures" (DoE, 1995b).

It is suggested by Ducrotoy and Pullen (1999) that discussion amongst Non-Governmental Organisations (NGOs) concluded that the DoE (1995b) document is weak because it failed to address the growth of CAS. And although the document does outline many of the issues that perplex coastal legislative and planning management systems, its centrally-derived policies and legislative vehicles constantly off-load management responsibilities onto the LA-enforced Bylaw mechanism. Hence, Bylaw enactment is becoming more prevalent in the management of CAS and its role requires special attention.

### **3.7.3. Local Government Bylaw Control Mechanisms**

LA CAS control Bylaws originate from a number of Acts which seem to have been developed with a degree of passivity. The CAS-relevant current bylaws are shown below.

- **Sections 82-83: Public Health Acts Amendment Act 1907**  
*Bylaw for the seashore; bylaws for promenades*
- **Section 231: Public Health Act 1936**  
*Bylaw for public bathing*
- **Section 76: Public Health Act 1961**  
*Bylaw for seaside pleasure boats (including powers to set speed limits)*
- **Sections 17: Local Government (Miscellaneous Provisions) Act 1976**  
*Bylaws on bathing and boating*
- **Section 185: Local Government, Planning and Land Act 1980.**  
*Bylaws for hired pleasure boats(section 94 of the Public Health Acts Amendment Act 190 – power to license pleasure boats – are also relevant)*

The Acts and Bylaws shown above are limited in their application, and emphasis is on public safety and pleasure boats. Environmental considerations are omitted, along with the protection of persons from their own actions. Section 17 extends the LA boundary mark up to 1000 m seaward of the low-water local boundary. This does not prohibit alternative sea uses e.g. the navigation of 'vessels' in specific zones, although their proximity to bathers can be regulated. Regulation may be related to speed or navigation. The DoE (1993a) noted that the Home Office is normally only willing to confirm Bylaws that apply during the summer season. The limitations of LA Bylaw powers contribute to the issue of CAS management.

Other complications exist. For instance, in a court case arising from an accident between a ski-boat driver and a (PWC) rider, the question arose as to whether the PWC rider's injury had been 'suffered onboard a vessel.' The court ordered that the PWC was NOT a vessel under the terms of the 1894 Merchant Shipping Act. This highlights how previous Acts may fail to encompass contemporary uses of the coast and result in loopholes in the legal system by which CAS participants or others may incur loss. There is some evidence that governments have attempted to deal with these issues. For instance, in 1998 the Government Inter-Departmental Working Party published a report, which concluded with 59 recommendations for further action. The Bylaw review's main recommendations were:

- LA powers should be consolidated and updated. That would mean local coastal bylaws being consolidated under a single statutory provision and updated to reflect the modern forms of coast-related recreation, such as jet skiing and powerboating.
- Powers should include the ability of LA to provide exclusive bathing zones or areas where all types of craft, powered and non-powered, can be excluded.
- In addition to specific powers, LA should be given more general bylaw powers to regulate activities affecting the wider environment.

(DEFRA, 2002)

DEFRA in response to these recommendations issued the following statement:

“The Government is committed in the long-term to introducing legislation to implement the review’s recommendations where changes to the law are needed. In the meantime, we are concentrating on a non-legislative strategy consisting of:

- A safety campaign led by the MCA to alert recreational users to the dangers they face on the water.
- The introduction by the MCA of a voluntary watercraft registration and identification scheme”. (DEFRA, 2002)

#### **3.7.4. Harbour Authorities and Bylaws**

Harbour Authorities differ somewhat from their LA counterparts because they have special powers that allow them to make Bylaws. Their powers derive from many sources. For instance the Medway Ports Act 1973 states “. . . for regulating the use of yachts, sailing boats, rowing boats, pleasure craft and other small craft [and] for regulating the launching of vessels within the port” (BMIF, 1999). This study requires only the acknowledgement that these powers exist, and therefore examination of these powers will not be furthered.

### **3.8 CAS Government Agency and Alternative Management Mechanisms**

There are several other relevant organisations related to maritime safety that have a direct association with CAS participants. The most important of these is the Maritime Coastguard Agency (MCA) identified by DEFRA as instrumental to CAS safety.



### **3.8.1 Maritime and Coastguard Agency**

The MCA is an executive agency of the Department for Transport (DfT) and developed in 1998 from Her Majesty's Coastguard service (HMC) (established in 1822 to tackle coastal smuggling). McCormack (1994) noted that safety became a part of the HMC system in 1923. It was subsequently deemed that creating the MCA from the HMC would give a holistic perspective to maritime safety by increasing maritime communication systems and training procedures. It was also intended that the formation of the MCA would lead to the combination of UK Search and Rescue systems into a single National Search and Rescue Plan.

The MCA noted that, in 1997, 65% of all reported incidents by the HMC involved pleasure craft. It was further noted that many of these incidents were 'preventable'. The Voluntary Code of Conduct to promote best and safe practices for leisure craft was a DEFRA initiative subsequently developed by the MCA and launched in 1999. The MCA state that they are responsible for developing, promoting and enforcing high standards of marine safety, minimising loss of life amongst seafarers and coastal users and providing a 24-hour maritime emergency service, as well as reducing the risk of marine pollution from ships that affect UK interests. Hence, the MCA has a significant role in the overall CAS management process.

### **3.8.2 The Royal National Lifeboat Institution**

The Royal National Lifeboat Institution (RNLI) is also recognised by the MCA as part of the safety procedures for search and rescue operations. The RNLI is a registered charity that is dependent on donations and uses trained volunteers, manned lifeboats and stations situated intermittently along the coastline for marine rescue operations. The RNLI provides on call 24-hour search and rescue services to a seaward 50-mile limit. There are currently 224 lifeboat stations with an active fleet of 320 lifeboats of various sizes *in situ* in

the UK. In 2001, the RNLI rescued 6,922 persons i.e. an average of 19 per day. The RNLI documented 3,740 rescue emergencies to pleasure craft during the same year, 54% of their total. The RNLI safety procedures are used by the beach Lifeguard service and are currently on 'trial' with Cornwall's Restormel and Carrick District Councils (RNLI, 2002).

### **3.8.3 Sport England**

The English Sports Council began operating under Royal Charter in January 1997. Before then, responsibility for the development of sport in England lay with the GB Sports Council (Scotland, Wales and Northern Ireland already had their own Sports Councils). In 1995 extensive consultation and debate dating back to 1987 culminated in the Government policy paper 'Sport: Raising the Game'. This initiated a streamlining process for the organisation of sport in the United Kingdom. The GB Sports Council was disbanded and replaced by Sport England (SE), which took the responsibility for the development of sport in England. The work of SE deals with the following areas: Audit and Corporate Governance, Staffing and Remuneration, Equity, Investment and Partnerships. There are also nine Regional Sports Boards and a network of partners, which include both private and public sectors, LA, NGB, national and regional organisations concerned with sport, recreation, education and the environment (Sport England, 2003).

In a similar way to the MCA, SE is a government agency and, amongst other things it, it functions as an ambassador for the Department of Culture, Media and Sport. It is therefore an important actor in the overall management of CAS. SE also assists the creation of a cascade of different types of sport in England and concentrates on the development of potential Olympians, issues of funding and sport inclusion (Sport England, 2003). SE has produced a number of CAS related reports that have relevance to this study. For instance, the SE Planning Bulletin, Planning for Water Sports (2001) suggests that the existing CAS

planning system has little or no control over the use of coastal waters and that although harbours, docks and estuaries are perceived as providing 'reasonably safe environments' the inshore and offshore zones are less secure.

SE has made a commitment to assist LA in the preparation of CAS related development plans. This land use planning policy statement has gone some way in identifying some of the issues that SE perceive as contributory to the complications associated with CAS. Some of the Sport England (2001:14) planning policy objectives (PPO) are listed below.

- PPO17 SE suggests that development proposals for sport should be based on the 'best available place'. Such as the planned approach, the provision of protection of sites and facilities, the assessment of sport impact and a commitment to appropriate management measures.
- PPO18 suggests that in a situation of irreconcilable conflicts alternative locations should be found to accommodate the displaced sports, to similar or improved standard.
- PPO30 Aims to protect, improve and bring into use new resources for water-based sport. And to reduce negative social and environmental impacts of watersport through good management practice and by the use of codes of conduct.

The PPO30 notes that the reduction of potential conflicts may be attained through good management practices and codes of conducts. In the guiding principles (GP) set out by SE GP3 emphasises that the long-term need of English sport is a planned approach to provision. Furthermore, it is reasonable to suggest that SE also recognise that the Sport Codes of Practice (SCP) are a priority to NGB and it is these NGB SCP that will in fact be used in the PPO30.

The above stresses the importance of SE to the CAS management processes. Hence, SE will require further examination by this study.

### **3.8.4 National Governing Bodies**

National Governing Bodies (NGB) are noted by governmental and non-governmental bodies to have the necessary expertise to prepare and implement Sport Codes of Practice or Conduct (SCP). The NGB of the individual CAS differ in their development. For instance, the RYA have been established for some 167 years, in contrast to the BSA which was established in 1966. This point is important because the organisational development of each NGB will direct the types of organisational procedures currently practised. Primarily NGB are private concerns collecting monies from their members and from alternative activities such as instruction, competition and festivals (discussed in Section 2.5.5). Furthermore government has not consolidated NGB and this has led to contention because two or more separate organisations may make claim to be the NGB of a CAS. Also important to this study is the fact that the RYA (2002) stated that between 1994 and 1999 the CAS of sailing in England has received over £20m for the building of facilities and the RYA has been instrumental in the distribution of this funding. In contrast other NGB have received no funding at all.

NGB also exhibit cultural entrenchment. For instance the RYA is noted for its negative response to any type of legislation that may impede navigational rights. For instance, Edmund Whelan (RYA Deputy Secretary General Head of Legal and Government Affairs) was quoted by the RYA as stating that:

“One of the great attractions of boating, under sail or power, is the freedom from the mass of rules and regulations that govern us ashore. We are free to go wherever we choose on tidal waters or broad navigable rivers. We need no government licence to drive our boat, no inspector to tell us it is safe (on tidal waters at least) and no coloured disc to say we have paid our coastguard fees. The United Kingdom is one of the few countries in the developed world where such freedom still exists. Yet much of it is under threat from proposed Government regulation”.(RYA, 2003)

This is also important for this study because NGB act as spokespersons for their CAS even though their membership numbers may only be representative of a small percentage of total CAS users. NGB decision-making processes are therefore very important to this study as they may effect the way that CAS management becomes manifest. For instance, the discussion of PWC in Chapter Two placed emphasis on how a NGB can resolve perceived CAS managerial problems.

The Government Plan for Sport (DCMS, 2001) stressed that in the year 2000 the Government pledged (over three years) through the UK Sport and SE mechanisms some £7 million funding for the devolution of greater responsibility to NGB (inclusive of CAS NGB). This included activities perceived to assist in the modernisation of NGB. The Government also placed emphasis on the development of strong NGB partnerships to enable higher standards of management and clear, realistic plans for widening participation and developing talent. The Government Plan for Sport stresses the importance of NGB in the CAS management process.

### **3.9 The Concept of Sustainable Development and Integrated Coastal Zone Management (ICZM)**

Sustainable development and ICZM are ways in which coastal legislation and sustainable development policies are currently linked and they have been referred to sporadically throughout the previous chapters. An overview of sustainability issues is important for this work because aspects of sustainability that affect CAS activity in the coastal zone are incorporated into this work. Additionally the brief discussions here will provide a foundation for interpreting the data that reflect these issues.

### **3.9.1 Sustainable Development**

The most influential occurrence that intensified and consolidated the concept of sustainable development was the United Nations Conference on Environment and Development (UNCED), Rio de Janeiro, June 1992. Agenda 21 was the primary product of UNCED and the accepted action plan for the next century.

The foremost impact of the concept of Sustainable Development on CAS is via the 1994 UK National Strategy for Sustainable Development (NSSD, 1994). This strategy amalgamated the aims and objectives of the Earth Summit and represented the UK implementation process. The Strategy included the contents of two earlier documents, 'This Common Inheritance' (the UK's '1990' Environmental Strategy) and the EC's '1992' Fifth Environmental Action Programme. The NSSD mapped a number of features that directly involved issues relevant to CAS and other leisure pursuits that take place at coastal locations. The mapping positively acknowledged the economic and potential educational benefits associated with the leisure (tourism) industry. Yet the mapping also highlighted negative values of leisure activities at a site (overcrowding, wear and tear, noise and disturbance, traffic to and from attractions) and the negative values associated with demands for inappropriate development. The NSSD also noted that conflicts occur between different forms of leisure pursuits and/or between those participating and the local community.

It was further suggested by the NSSD (1994) that rapid development of recreational activities beside, on, in and under the sea produces important effects, particularly when activities compete with wildlife. This suggests that CAS may also have certain environmentally linked problems, which both the data collected in this research, and their interpretation, must address. The further exploration of the mechanisms that activate

sustainable development will show how the source of this concept introduces other complications for the management of CAS.

The concept of Integrated Coastal Zone Management (ICZM) (which embraces the concept of sustainable development) has particular relevance to CAS and must be considered as central to the focus and mechanisms associated with the coastal zone. This will also require exploration if the research described here is to be effectively interpreted.

### **3.10 History of Integrated Coastal Zone Management**

In the case of coastal spaces a holistic management approach has been developed over a number of years. This is now referred to as Integrated Coastal Zone Management (ICZM). Due to clear links between the ICZM approach and that of SD they form a system to which the UK coastal planning and policy are referred. The concept of Integrated Coastal Management (ICM) was chiefly developed and used in the mid-sixties by the United States, Australia and the United Nations Regional Seas Program (Sorensen, 1997). In the late 1990s ICM has progressed to a global scale, involving some 90 coastal nations and semi-sovereign states.

#### **3.10.1 The ICM and ICZM Concepts**

There are five fundamental coastal and maritime elements shared by the 177 coastal nations. Sorensen (1997) identifies these as 'coastal systems, resources and environment, coastal issues, institutional arrangements, planning and management techniques, and finally stakeholders.' The purpose of identifying shared elements is to allow tangible international comparisons to be made, thus increasing coastal and maritime data sources and reducing exploratory overlap. The ICZM system is clearly defined as containing

particular qualities that would embrace human interactions and natural physical processes.

DEFRA (2002) delineates the broad context of ICZM as:

“Integrated Coastal Zone Management is a process that brings together all those involved in the development, management and use of the coast within a framework that facilitates the integration of their interests and responsibilities. The objective is to establish sustainable levels of economic and social activity in our coastal areas while protecting the coastal environment. ICZM is central to an ecosystem-based approach” (DEFRA, 2002: 24)

### **3.10.2 The Interaction between ICZM and CAS**

Concerns about sea level rise since the 1990s have added importance and relevance to the ICZM concept. The Inter-Governmental Panel on Climate Change requested that all coastal nations implement CZM by the year 2000 and this action launched ICZM as an influential element in planning and policy for coastal locations. (NSSD, 2004)

Gubbey (1990) noted that the prevalent UK coastal management structure contained co-ordination problems. These particular problems were made manifest at the 1993 World Coast Conference:

“ICZM has encountered obstacles such as fragmented institutional arrangements, single-sector orientated bureaucracies, competing interests and lack of priorities . . . Institutional arrangements and intersectoral and intergovernmental linkages are too often poorly articulated, ineffective and inefficient” (European Commission, 1997:xii).

The discussions relating to CAS management clearly show that these problems are manifest in the current CAS climate.



However, the UK Government has made a commitment to the management of the coastal zone within a clear framework of national policy and this will take account of the interactions between the landward, seaward and the inter-tidal elements of the coastal zone. Furthermore a proposal<sup>4</sup> concerning the implementation of integrated coastal zone management in Europe was put forward by the European Parliament. The proposal encouraged Member States to undertake a national inventory of the situation of coastal zones, taking into account a variety of factors such as legislation, institutions and actors involved in the planning and management of coastal zones. The importance of this to CAS is that it will obviously include the 'actors' and stakeholders that are involved in CAS management.

### **3.11 Discussions on the Use of ICZM as a Tool for the Development of CAS Management Structures**

There are many aspects of CAS which are related to ICZM and which involve many governmental and non-governmental bodies. There are also many opportunities by which the ICZM framework can influence the future development of policies and legislation for CAS. However, these opportunities are complicated by the complementary relationship of ICZM with the concept of sustainable development.

As previously discussed, CAS introduces social and economic complexity to the management of the coastal zone. Therefore any development of an ICZM strategy must consider these before the overall structure plan is finalised. This study is aiming to provide information that will ameliorate specific CAS related problems and help direct the aspects of ICZM which deal with sustainability issues associated with CAS. These issues include economic (tourism) and social (quality of life) components. The concept of ICZM has

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<sup>4</sup> This proposal amended the recommendations made by the European Commission and Council in 2000.

therefore a real relevance to this work and offers a planning device that may be useful in implementing its findings.

### **3.12 Summary**

It is evident from both Chapter Two and the preceding discussions that complications have arisen from the coupling of sport and tourism in that the numbers of participants taking part in CAS are increasing rapidly and there is a suggestion that CAS management mechanisms are not evolving in parallel. It is hoped that the work reported here will serve as a catalyst for the creation of new management structures. This is because data derived from a grass root perspective may provide the necessary baseline information from which coastal managers from LA, MCA, SE, and the RNLI can begin to formulate sustainable modes of CAS management. For instance, PPG20 (DETR, 1992) refers to the capacity of the local environment to accommodate water-based recreation, which suggests that the provision of a formula to assess the impact of CAS is one way forward when considering the types of capacity attached to an environment. In a similar way this study suggests that the social values provided by sport may also provide a formula for assessing the social carrying capacity of an environment that is accommodating water-based recreation.

A large CAS participation increase has occurred during the 1970s and 1980s. Although this growth was partly stimulated by the Sport for All initiative, it is apparent from the evidence provided by the 'Select Committee Report' detailed by the Environment Committee (1992) that the correct mechanisms for the integrated management of this initiative were not in place at that time. It is evident from the discussions in this work that poor management structures have evolved due to the limitations of LA Bylaws as management tools. In addition to this the promotion of CAS via a cascade of different and occasionally conflicting bodies such as the Sports Council, National Governing Bodies, MCA and Local Authorities may be inappropriate and may have served to frustrate

management initiatives. Specific CAS representation and practical management through the 'promotion of Sports Codes of Practice' via independent NGB (some of which did not come into being until the late 1970s) may also be ineffective, because there is a suggestion of different NGB claiming authority over one sport. Therefore, the correct information regarding SCP may be confused by CAS participants with similar information provided by informal sources and this will further reduce the effectiveness of CAS management. Taken together these comments suggest that the correct mechanisms for CAS management are still not in place.

The CAS management structures discussed above have produced a host of double-edged issues, some of which emerge from the polarisation of the social needs attributed to sport, and others from the economic needs attributed to tourism. Hence, sustainable CAS management will require a balance between CAS cultural representation by their participants and the economic benefits of the CAS-tourism axis.

The discussion above (Sections 3.9) also outlined the concept of sustainable development. It is evident that this concept is now influencing governmental decision-making processes. For instance, the document "Policy Guidelines for the Coast" (1995b) presented by the DoE and the SE bulletin "Planning for Watersports" (SE, 2001) included reference to sustainable development. However, the most important modification in the UK approach to sustainable development is the inclusion of the social aspect and this modification is emphasised in the Department of Culture Media and Sports, report of the Governments' Plan for Sport (DCMS, 2001).

The social values highlighted in notions of 'quality of life' and 'future welfare aspects' may be appreciated as empowering the complete sustainable concept. Prior to these values

becoming manifest, it may be suggested that an imbalance was occurring between the values associated with the environment and the economy.

The inclusion of the third value (social) gives the concept of sustainable development the ability to act as a structuring element for the current study and this in turn will frame the data collection and processing possibilities. As discussed in Chapter Two the 'Sport for All' initiative was initiated by the UK government and spearheaded by the Sports Council to encourage the population to take up and benefit from sport. Hence through these social elements the concept of sustainable development becomes integral to any decision-making processes that affect CAS, and this will provide one paradigm for the way that this study will evolve.

It is evident throughout the previous chapters that CAS contributes importantly to society and that the increase of CAS activities must be therefore encouraged. However, there is a myriad of issues associated with CAS participation, in particular in relation to the way in which they are managed. These issues are complicated and require careful deliberation in order that they can be assessed for their positive contribution to the sustainable development of CAS management. Furthermore, because many coastal systems are shown to have evolved in isolation of each other, knowledge gaps exist and cause CAS confliction and conflict. This study perceives that a major breach in CAS knowledge can be associated with an overall lack of understanding by coastal managers of issues of crowding. Therefore one aim of this study is:

**Aim One:** To identify the compatibility levels for the coexistence of certain sports and the carrying capacity for these activities that can be attached to locations in the coastal environment. This model would then act as an aid for effective water-space management for multi-use aquatic sports and recreation and inform future coastal management and planning.

The objectives of the study, which have been generated from, and referred to in, the discussions of Chapters One to Three, will now be discussed in detail. These discussions will also highlight how the study offers unique information to CAS decision-making management structures and how this information will allow the formulation of solutions for CAS conflicts.

## **CHAPTER FOUR: METHODOLOGY**

### **4.0 Introduction**

Chapters One to Three reviewed (global) European literature to provide fundamental information about the CAS landscape. This revealed the main foci for investigation and underpinned the development of the two main stages of the research suggesting that the research strategy should be designed to engage with the participants of CAS (Stage One) and also with those that provide CAS management and executive governance (Stage Two). It was considered that by examining the CAS landscapes from both the grass root and the governance perspectives a deeper and more detailed insight could be achieved. A parallel research strategy was used for both stages but because of the differences between them two tailor-made design stages were used.

Stage One of the research consisted of three linked sub-sections: 1998 pilot study, 1999 Local Authority (LA) data collection and the main field work (2000).

The first sub-section (1998) consisted of a short mixed-methodology pilot study designed to engage with CAS participants at the grass roots level; this would provide the researcher with a snapshot of information relating to the CAS landscape. The second sub-section was designed to supply quantitative data about CAS to extend the sparse local statistics already extant. By employing two different data collection exercises (1998 and 1999) at the beginning of the research the main survey work (2000) would then be clearly informed.

Stage One provided substantial information about the CAS landscape that emphasised the need for the second stage work. However, it was clear from the literature review and the analysis of the sub-stages of Stage One (particularly from the year 2000 fieldwork) that

CAS governance or the lack of it was a possible cause of some of the problems that were occurring within the CAS landscape. Hence it was determined that a second stage should be carried out which was designed to engage with representatives of the bodies that provide for CAS governance, such as individual representatives from central government offices, government agencies, Local Authorities (LA), National Governing Bodies (NGB) and relevant institutions. It was hoped that the information from Stage One could be used with the information from the 'governance' stage of the research to provide a more holistic overview. By collating data from both ends of the CAS spectrum the probability of identifying the significant issues that are affecting the actual CAS landscape correctly was increased considerably.

#### **4.1. Methodology**

A mixed method (qualitative and quantitative) design has been used for this study (Stage One and Stage Two). Denzin and Lincoln (1998) suggest that (because two or more techniques of the same method have been used) this is akin to intra-method triangulation. Crawford and Christensen (1995) cited in Sarantokos (1998) also emphasise that it is not unusual for researchers to employ mixed-method designs to investigate aspects of the same phenomenon (Sarantokos, 1998). Triangulation is perceived by Blaike 1988 and Burgess, 1984 (cited in Sarantokos, 1998) as being undertaken:

- To obtain a variety of information on the same issue
- To use the strengths of each method to overcome the deficiencies of the other
- To achieve a higher degree of validity and reliability
- To overcome the deficiencies of single-method studies.

Section 4.2 will discuss the precise mix of quantitative and qualitative methodology used in this work.

## 4.2 Design Stages

The research design strategy used an underpinning framework that employed a structured and layered analytical approach. This ensured that enquiries developed in a consistent manner and had the potential for future replication.

One of the key reasons for selecting this research design is because hypotheses can be developed in an effective manner i.e. as Black (1999) noted: “. . . the results of a study should be to provide evidence to help resolve the validity of the hypothesis stated, and at the same time, the process should be replicable by another independent researcher” (Black, 1999). Black also suggested that there are certain stages for the designing and carrying out of a study, these are illustrated in Figure 4.1.

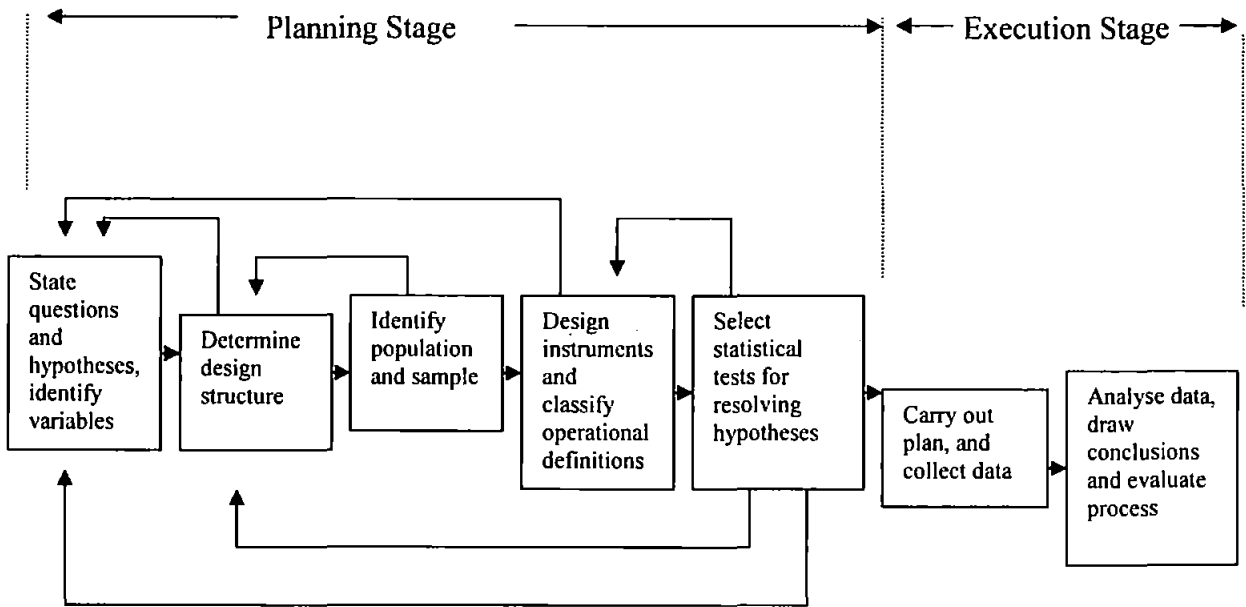


Figure 4.1 Stages of designing and carrying out a study, including iterations for modifications and improvements during planning (Black, 1999).



## **4.3 Stage One**

### **4.3.1 Sub-Section One (1998 Pilot Study)**

The pilot study (1998) ensured that many of the weaknesses associated with social research such as non-response rates could be identified and eliminated from the main survey of this work (2000). For instance, by providing some guidance as to the adequacy of the sampling frame, population variability and expected non-response rate (Moser and Kalton 1971). In addition, a pilot study provides a measure of the adequacy of the questionnaire, the data collection method, and the probable cost and duration of the main survey.

In addition to the above Moser and Kalton (1971) also emphasise how a pilot survey nearly always suggests important improvements to the questionnaire and also, from the results, a decision can be made as to whether the main survey is still worth carrying out. For this work, it was equally important to make a short investigation of how available data matched the real scenario. For instance, do the data that is made available by national sports bodies really reflect the numbers of those who actually participate in CAS activities? Therefore, the pilot exercise was crucial to the overall design because the data would clarify the aims and objectives of the main survey.

The literature review revealed that CAS conflict was occurring at many international, European and national coastal locations. The study also revealed that sports that take place in the outdoor or wilderness environment are perceived by participants to contain more personal risk factors than sports that take place in a managed environment, and that being exposed to a higher state of risk was one of the desirability factors. Furthermore the literature review indicated that 'sport' is an important component of the UK government strategy in relation to social arrangements but also showed that when a human resource

becomes socially oversubscribed then certain social phenomena begin to emerge and that some of these are linked to expressions of conflict.

Hence this suggested that two opposing mechanisms were operational within the CAS landscape and that opposition was being exacerbated by the increases in CAS participation numbers.

One of the 'opposing' mechanisms is linked to CAS participants' perceptions of the quality of the experience associated with CAS activity and the recognition that quality of experience is a very important element of 'sport'. For instance, the literature review revealed that the government stance for the national development of sport emphasises that all members of society should take up sporting activities. Hence to increase the likelihood that a participant will return to a sport the activities must ensure that a good 'quality of experience' is achieved. The second 'opposing' mechanism is measurable from CAS participants' perceptions of risk. This is because unacceptable levels of perceived risk are likely to impact upon the CAS participants perceptions to the quality of experience. The literature review noted that perceived high-risk associated with exposure to the natural environment was one of the desirability factors that encouraged participation in CAS. However, externally derived extra risk may occur through CAS participant saturation of a marine environment and this may be an unacceptable phenomenon.

It was therefore important to assess whether factors external to the sporting activity were causing a heightened perception of risk for the current CAS participant population, because this would have important implications for managers of the overall sport landscape.

The literature review also revealed the types of CAS management mechanisms that oversee marine environments and the ways they function in the CAS landscape. For instance, the

different type of response instruments that they incorporate and how these interact with CAS participation and the marine environments. Hence it was deemed important to begin to examine issues relating to the in situ management structures that support CAS participation, such as NGB and LA as well as other overarching management mechanisms.

It was clear that a pilot survey could build upon the literature review and provide a means to enquire further into the issues revealed by interrogating grass roots level participants. A pilot study would also ensure that questions for the main survey were clear and that the probability of respondent non-response was reduced. Also by employing a number of open-ended questions during the pilot study typical responses could be assessed and these would inform the main survey.

Hence, the main aim of the 1998 pilot study was to explore the issues associated with CAS that the literature review had revealed by providing a snapshot of the actual CAS participant environment. The pilot study focused upon the individual CAS participant characteristics, their perceptions of risk and quality of experience whilst participating in an activity, plus an enquiry that would indicate the understanding and knowledge of CAS participants of CAS management structures.

The 1998 sample sites were selected from information gleaned from informal interviews with Beach Safety Officers (BSO) from Carrick District Council and Restormel District Council. In particular sites were selected that were known to have had conflict problems. It was considered important to focus on sites that were known to have experienced CAS problems because this would assist in the analysis of the snapshot by increasing the possibility of interviewing those who may have encountered conflict; thus revealing the presence of the experimental variable. The BSO interviews identified the beach sites of Fistral, Perranporth, and Holywell Bay, and the marina site of Falmouth as 'ideal' locations

for a pilot study. Because information gleaned from both the literature study and the BSO suggested that weather and increased tourism were more likely to produce higher rates of CAS participation from the end of July to the beginning of August, this period was selected as the most appropriate in which to carry out the pilot fieldwork. Each of the four sites was visited on two occasions on one weekday and also one weekend day. It was thought that this would reduce any sample bias because it increased the potential of interviewing both visitors and locals to the site. For instance, it would be more likely that persons from the locality who worked during the week would not be working at the weekend and vice-versa. The respondent selections were made from systematic timed observations made by the interviewer. This gave the interviewer the opportunity to observe individuals in the water participating in an activity and hence ensured that they were actual CAS participants. However the selection of respondent was not influenced by their personal characteristics, gender, age etc. Hence the sample was kept as random as possible. It was deemed unnecessary to exclude young children from the sample population because it was assumed that it would be highly unlikely that young children would be participating in the deeper coastal waters where CAS take place.

The 1998 survey work employed a qualitative semi-structured face-to-face interview method and each interview lasted between 35-45 minutes. Additionally, because the pilot fieldwork was aimed at making tentative enquiries and developing the main survey work a majority of open questions were used. The results of the 1998 pilot study (discussed in detail in Chapter Five) provided excellent information from which the experimental, dependant and controlling variables could be identified for the development of the year 2000 survey work. For instance, the 1998 pilot questionnaire asked CAS respondents, *"How would you describe a perfect aquatic sports session?"* The question was designed to reveal the factors that respondents perceived as having an effect on the quality of their

CAS experience. The results of this enquiry revealed a list such as weather, friends etc; these domains were then used to inform the year 2000 study.

More importantly, the 1998 results assisted in the development of the following hypotheses, which were incorporated into the design of the year 2000 main research survey. The four hypotheses developed from the literature review and reinforced by the 1998 pilot study suggested that:

- There is a unique common character profile attached to the participants in CAS.
- There is a difference in the attitudes and perceptions of individual CAS participants to 'quality of experience' criteria.
- There is a difference in the attitudes and perceptions of individual CAS participants to issues of coastal loading, risk and safety.
- The understanding by CAS participants of issues relating to policies and management programmes that regulate CAS is not variable.

The pilot study clearly performed in a satisfactory manner because it exposed that CAS behavioural saturation levels were perceived by participants to be often reached and possibly exceeded and there was a clear linkage of these occurrences to actual hostility.

The use of the open-ended questions for some of the pilot study enquiries informed the construction of the main year 2000 survey and allowed it to be developed to present more focused questions to the respondent and therefore reduce bias. As a continuation of these tentative enquiries further investigation (1999 LA data collection) was undertaken.

#### **4.3.2 Sub-Section Two (1999 LA Data Collection)**

The literature review also revealed that data from the overall CAS landscape were both patchy and poorly recorded. However, it did show that Cornwall County Council had carried out a flyover over some of the Cornwall coastlines in 1976 and the details of this had been recorded and supported with photographs. The information contained in the

Barrington (1976) Aerial Coastal Recreation survey (ACR) reports was a significant find because the time, date and weather conditions had also been recorded. Additionally the dates of the survey coincided with the period that was selected for the year 1999 and 2000 studies i.e. the summer months. Hence it was decided that the report could be used as a reliable, comparative benchmark for the analysis of any new data relative to CAS especially if the collected data were geographically comparable. It was therefore considered important for the development of the study to engage in a data collection exercise at the CAS sites that the Barrington study had recorded, because this would give a clear indication of any changes that may have occurred within the CAS landscape. For instance, change in the type of CAS craft being used and the participant numbers.

This 1999 data collection focused on the LA surf lifeguards and was intended to provide the main research with quantitative data for analysis and cross correlation. Obtaining data about the types and levels of CAS in Cornwall proved to be extremely difficult. For instance, it was found that CAS data were recorded inconsistently by the individual authority lifeguards and were held separately by each of the six LA in Cornwall, namely:

Caradon District Council

Carrick District Council

Kerrier District Council

Penwith District Council

North Cornwall District Council

Restormel Borough Council

The BSO associated with each LA is responsible for the risk assessment of known public beaches and the employment of professional lifeguards that operate during the season. Cornwall's method of coastal safety management, and the system by which information was being assessed and evaluated, had a fragmented approach by the independent LA. Each of the six councils employed different criteria and formulae to measure and record incidents and events that occurred during the season. For example, the term 'Assisted

Rescue' was interpreted into two incompatible classifications by two of the district authorities, thus correlation of the statistics provided by those authorities was difficult.

It appeared that the Cornwall Coastal and Beach Safety Programme lacked any central co-ordination and although the dismembered approach did not affect the professional manner by which individual authorities implemented coastal safety management, it lacked the appropriate consistency for gathering and interpreting data. Therefore, alternative methods by which data could be collected were explored.

#### 4.3.2.1 Data Collection

The LA Head Lifeguard of the coastal location fills out a Daily Log Sheet (DLS) at the end of the day. The sheet typically describes the coastal environment in terms of the natural elements and highlights incidents and events that have taken place that day. Therefore, for data correlation a focus on the DLS as the primary source of quantifiable information was essential. However, because of the differences in DLS used currently by each LA, it was important for a universal approach to be developed. The design of a new DLS was adapted from a format accredited to Bord, 1997 (Restormel Borough Council). Each LA contributed specific guidelines to the criteria necessary for the purpose of their records.

All six LA introduced the new DLS for the season commencing May 1999. To ensure that lifeguards remained attentive to the criteria associated with elements of the DLS an explanatory paper was attached (Appendix 1:2). Lifeguards completed the DLS at the end of the day recording weather and sea conditions and levels of activity on the beach and in the sea. Other entries included all rescues and assisted rescues; identification of incidents and instances of preventative advice, and surfcraft warnings associated with CAS participants.

LA also agreed that a craft assessment sheet should be adopted (Appendix 1:4). The craft assessment sheet's primary aim is to record active aquatic craft by number and type on maintained public coastal areas. To reduce unnecessary entries the assessment sheet has one week of information recorded on a two-sided A4 sheet. It sought information at three set intervals during the day. The second function of the sheet was to record comments by the lifeguards relating to their observations associated with hostility, overcrowding, inappropriate behaviour, ability, or their professional assessments of a mis-match of craft sharing water space. The observations made by the lifeguards help to distinguish the types of criteria that exist that induced conflict or hostility between CAS participants. The information from the DLS and the craft assessment sheets allowed comparisons to be made with data from the Barrington (1976) study.

The results from the analysis of data from the 1999 LA data collection and the 1976 flyover study informed the main field work (2000) by providing a detailed overview of the CAS sport practices that occurred in many coastal areas maintained by Cornwall LA during those summer seasons. This was particularly important for this study because other sources of data about CAS were negligible.

It is important to note that the 1999 LA lifeguard data collection exercise did contain some design limitations with regard to the generalisation of results. The main limitation was that the collection exercise could only observe and record CAS related data at locations that were patrolled by the LA lifeguards and therefore this factor may have produced some bias. For instance, the presence of the lifeguards may have an influence on the behaviours of some/all of the CAS participants at those locations and this may have increased or decreased the occurrence of conflict. Furthermore, although clear instructions were provided to the participating lifeguards with regard to the filling out of the form, it would



have been difficult to monitor the individual form filling. Hence, this is also acknowledged as a possible source of bias.

The results from the data collection exercise (detailed in Chapter Five) showed that 12 different types of CAS were operational in the study locations and that in some of these locations the mix of CAS type was diverse and the activities were intensive. By comparing the data with the Barrington (1976) survey it was evident that the types of CAS and the participation numbers had increased dramatically during the 1976 -1999 period. Also, technological developments (wet-suit design, lighter craft material etc) had made a significant impact upon CAS numbers. Additionally, by comparing the data sets there was clear indication that a cultural change had occurred. The beach activities (i.e. bucket and spade) traditionally associated with the coastal fringes that had once been used as an attractor for visitors had changed. The data indicated that the more dynamic CAS water sports were clearly becoming the salient activity on the coastal fringes and further suggested that CAS activities acted as an attractor even when the weather was overcast. This last mentioned is in contrast to the traditional activities. The data also showed clear evidence of CAS participant conflicts and that these were typically occurring at intensive multi-use sites.

The lifeguards carrying out the data collection noted that during the summer months they were under intense pressure caused by the influx of visitors to the CAS sites and that this affected the consistency of the data collection. Hence, due to the variations in the quality of the beach data collection from beach-to-beach, only beaches generating a substantial amount of data were examined. Each beach was given an individual assessment because it emphasised the individuality of CAS locations.

The study indicated that the lifeguards who provide a management function at CAS sites experience intense pressures. If this management system is being subjected to intense pressure from the environment that it is managing, then this would suggest that this particular environment is pressing the limits of the management system.

In this case pressures were being generated by the participation and mix of CAS at any one location and by the fact that the saturation levels were being reached and on occasion, exceeded. Management resources cannot be optimised unless there is an understanding of the compatibility ideals of CAS.

The information from the 1998 Pilot Study and the 1999 data collections by LA lifeguards informed the design of the year 2000 survey (Stage One) which in turn underpinned the development of the year 2002 survey (Stage Two). This was important because the carrying out of the Stage Two work was dependent upon the information generated from the analysis of Stage One. Hence the aims and objectives of this work required precise and measurable development.

#### **4.4 The Aims and Objectives**

There are two main aims of this study and these support hypotheses from the two stages of this work, (Stage One containing three sub-sections) and each can be broken down into sub-objectives.

##### **Aim One: (Stage One)**

To identify the compatibility levels for the coexistence of certain sports and the carrying capacity for these activities that can be attached to locations in the coastal environment. This would then act as an aid for effective water-space management

for multi-use aquatic sports and recreation and inform future coastal management and planning.

The four objectives identified as the components of Aim One (Stage One) were broken down into identified sub-objectives:

- To determine if there is a unique character profile attached to the participants in CAS and whether that profile differs for the independent activities
- To investigate if there is a difference in the attitudes and perceptions of individual CAS participants in relation to 'quality of experience'
- To examine the differences in the attitude and perceptions of individual CAS participants to issues of coastal loading, risk and safety
- To accumulate information in relation to the variability of understanding by CAS participants of issues relating to policies and management programs that regulate CAS

#### Aim Two: (Stage Two)

To develop an integrated management model that would identify and define a clear 'executive' CAS organisational management structure. This 'executive' organisation structure will underpin the development of individual CAS management models.

The information derived from the literature review, the 1998 pilot study, the 1999 LA data collection and the results of the year 2000 field work all suggested that organisational barriers exist within the arrangement of bodies that have an interest in CAS. Therefore, to answer this question four research objectives were defined for the examination of the organisations that govern CAS.

- Identification of the marine and maritime coastal stakeholders that have an interest in CAS
- An assessment of the responsibilities of central government and their attached agencies, and external organisations
- An assessment of the awareness of marine stakeholders of current government management initiatives and structures

- An assessment of the awareness of marine stakeholders of the regulation, control mechanisms and facilities that currently govern coastal sports

A primarily qualitative semi-structured interview was used for this stage of the research and incorporated concerns identified by the year 2000 field work analysis.

## **4.5 Objectives and Measurable Items (Stage One)**

### **4.5.1 Aim One: Objective One**

**To determine if there is a unique character profile attached to the participants in CAS and whether that profile differs for the independent activities.**

In order for CAS management plans to become effective they will need to encompass the different types of people that use the coastal zone for CAS purposes. The enquiry described below explores the nature of CAS participant profiles and expands on the links that may exist between those profiles and the creation of successful management policies.

#### ***The types of CAS that are currently operational on the South West peninsula***

Investigation of the types of CAS that are currently operational on the coastal fringe will provide coastal managers with essential baseline information. For instance, the provision of specific CAS facilities on the coast (e.g. moorings). This information will assist coastal managers to make decisions related to tourism, environmental impacts or lifesaving organisations and similar. It will not only allow coastal managers and policy makers to optimise available resources and target specific plans at CAS hotspots for visitors to the region, but will also assist in the development of safety guidance and provision.

#### ***Age distribution of those who take part in CAS***

The answer to this enquiry will offer coastal tourism providers and coastal managers reliable information on which to base good forward planning and decision-making. For

instance, type of sport may be related to the age of participation in CAS and this may suggest that certain sports require specific age-related individual management approaches.

### ***CAS participant : visitor or resident category***

It was stated in Chapter 3 that tourism has an economic significance for the South West and particularly for Cornwall. Therefore it is important to explore the CAS resident–visitor proportions. The answer to this enquiry will provide information that will contribute to future coastal tourism management decision making and allow a sympathetic approach to be developed in response to the needs of visitor CAS participation.

### ***Origin of CAS participants***

It will be of interest to tourism and coastal managers to have an underlying knowledge of where CAS participants originate because the ability to target information will optimise associated costs and benefits. For instance, there may be certain inland regions that provide the South West with many CAS participants and, if identified, national bodies may be able to target these regions for CAS promotional and educational purposes.

### ***Proportion of males and females currently taking part in CAS***

The answer to this enquiry will allow practical management decisions to be evidence based (e.g. presence of female/male changing facilities). More importantly if there are significantly less females than males taking part in CAS it may suggest that the current ‘sport for all’ incentives are not effective in CAS. If correct, the implication is that further research should be undertaken as to why females are not participating in a particular CAS.

### ***Permeation of self-actualisation behaviour in CAS participation***

The 'hard' characteristics associated with CAS participants are of great importance to this study. However, other more subjective CAS participant characteristics are equally important and must be included in the overall profile.

Ideas of self-actualisation through sport (and specifically through CAS) are important and coastal managers must consider individual psychological 'drives or needs' when creating coastal planning policies and practices. This is because successful development of planning and regulatory policies for CAS must consider the psycho-social needs of CAS participants. Hence, the following enquiries will focus on these aspects of Objective One and inform coastal managers of the reasons why members of society take part in CAS. Knowing these reasons coastal managers will then be able to develop management (and safety) policies, which recognise the needs of participant self-actualisation.

### ***Importance of the intrinsic motivational aspects of sport psychology to the sporting choices made by participants in CAS***

This will provide a rationale by which coastal managers can interpret the degree to which CAS participant motivations are derived from intrinsic sources. For instance, the answers may indicate that coastal managers should ensure that coastal physical structures should complement (and not detract from) the perceived 'motivators' that encourage CAS participation. Managers must recognise the consequences of these motivational drives for coastal zone use, particularly in terms of safety and quality of experience. The identification of the learning curve motivator for self-actualisation leads to categories of participant ability.

### ***CAS participant perception of self- ability***

The answer to this enquiry serves this research in a two-fold manner. Assessing participant perceptions of self-ability will provide reliable information to coastal managers about the typical mix of current abilities of CAS participants and this will aid coastal planning and decision-making.

### ***Relationship between CAS participation, length of experience and participants' ability***

This topic will help to develop a mechanism that can assess CAS participants' perceptions of their own abilities. For instance, there may be certain lengths of participation time and relationships to age and gender that are associated with those that perceive themselves as beginners.

### ***Typical amounts of instruction in which a CAS participant engages***

The answers to this enquiry will provide coastal-tourism managers and sport providers with important CAS participant information and will therefore aid future decision-making. Significant differences may exist between the amount of instruction received by visitors that are participating in CAS and this may suggest that sports managers are not considering CAS participating visitors as a unique participatory group. For instance, it might support the idea that future facilities should provide enriched training for certain sports and that visitors should be targeted for CAS promotional and educational purposes.

## **4.5.2 Aim One: Objective Two**

### **To investigate if there is a difference in the attitudes and perceptions of individual CAS participants in relation to 'quality of experience'**

In Chapter Three the importance of the inclusion of sustainability and integrated coastal zone management into coastal planning was discussed. Furthermore, the current government's suggestion that UK planning approaches apply these concepts with an

emphasis on the 'social' aspect of the sustainability triad, directs coastal planning procedures to include 'quality of life' into the decision-making process. Therefore coastal managers will need to have a robust knowledge of the components of the 'quality of experience' (as the relevant 'quality of life' component) that CAS participants expect from taking part in their sport.

### ***The social values attached to the coast***

In Section 2.1 it was demonstrated that the UK government and others perceived sport as being beneficial to the 'fabric' of society and that the associated social values are currently identified as being part of the 'quality of life' component of the global sustainability programme. Therefore the answers to the above enquiries will update and inform coastal managers about the current values that are associated with the coastal zone and thus optimise coastal decision-making to include this aspect of sustainability.

### ***The significance of social values to the current CAS sporting landscapes***

Because the type of CAS may affect participant perceptions of social values the relationship between type of CAS and social values will be explored. This may then indicate that alternative influences are present in the CAS landscape and that alternative strands of sustainability assessment may be necessary to accommodate them. This will also provide evidence to managers and others about the value of CAS in terms of the wider aspects of sustainability and allow them to direct policy at improving sustainability outcomes.

### ***The importance of CAS participant attitudes and the type of craft they navigate***

When considering the social values associated with CAS culture (Section 2.3.2) in conjunction with the potential for conflicts (Chapter Three) there are indications that certain inter-sport rivalries/hostilities may pervade the CAS landscape. Manifestations of



these affect the individual's total 'quality of experience'. The enquiry above explores this issue and the answers will allow managers to extend their knowledge about 'quality' to include strategies to manage the interactions between CAS participants from different sports.

### ***The visual and natural conditions associated with the outdoor environment***

In Section 2.3 participation in sports in the outdoor environment was noted as containing motivators that are quite different from other types of sports; the risks associated with interaction with the natural environment were primary participation motivators. Objective One enquiries (Section 4.2.1) have also made psychological links with this factor and Objective Two will further these investigations. The answer to this enquiry will offer the coastal manager further information about the total 'quality of experience' that CAS participants perceive as important to their participation in CAS, and will also evaluate the current importance of natural risk to the 'quality' equation. From this a coastal manager will have information from which optimal decision-making may take place and also information which relates to the planning of coastal physical structures not only because of their potential impacts on natural coastal structures but also because of potential decrements to 'quality of experience' perceptions.

### ***What is the total number of participants and their craft from all the individual CAS classifications that can operate within a specified perimeter, before perceptions of 'quality of experience' begin to reduce?***

Section 3.1.1 highlighted that incompatibility of craft types may cause conflict between CAS participants. If conflict does occur it may be assumed that this would be detrimental to the total quality of experience. Therefore, coastal managers will need to have some information as to the total participation numbers and types of craft that may actively engage in CAS at any one time in any one environment. The answers to this enquiry will

provide coastal managers with information about coastal loading in relation to the coastal fringe social carrying capacity and also in relation to CAS participants' quality of experience. This can be used to develop robust CAS planning and management procedures that specifically address space pressures in relation to 'quality of experience.' This information will also aid coastal planners and managers to identify specific boundaries within which issues relating to Health and Safety will need action and thus assist the development of Health and Safety guidance.

#### **4.5.3 Aim One: Objective Three**

##### **Examine the differences in the attitude and perceptions of individual CAS participants to issues of coastal loading, risk and safety**

Section 3.1 discussed conflicts that have occurred in the CAS landscape. Often these conflicts happen due to incompatibilities ascribed to CAS multi-locations. Through the measurement of CAS participants' perceptions of hazard or undesirable risk (significantly different to participants' desire for "natural risk" (Section 2.3.1)) data can be provided to managers which will allow an insight into CAS 'conflict' situations. Undesirable risk is measured by the following enquiries.

##### ***What proportion of CAS participants have been involved in a CAS collision caused by an external source or by their own accidental actions?***

These queries will provide data to help identify a profile of the types of CAS participant and craft that are most likely to be involved in collisions. From this information coastal managers will be able to develop and implement improved Health and Safety measures and appropriate educational interventions.

##### ***CAS participant involvement in verbal, gestural or physical hostility***

Chapter Three noted that CAS conflict is often expressed by certain hostilities (verbal, gestural, physical). In order for coastal managers to be able to assess the potential for such

hostilities to occur between and within CAS at particular sites, and also for them to develop intervention strategies, evidence covering the frequency and nature of such hostility needs to be compiled. This will help to identify a profile of the types of CAS that are most likely to be involved in hostility and also the character profile of CAS participants who have been involved. From this information coastal managers will be able to identify locations that are potential 'hostility hot spots' and implement improved managerial and Health and Safety mechanisms.

### ***The presence of undesirable risk in the current CAS landscape***

Section 2.4 describes an increasing trend in the CAS participation numbers while Chapter Three also notes that the interactions between incompatible craft create conflicts. The coupling of these observations leads to an assumption that this may be a cause for undesirable risks and are a source of pressure for CAS multi-locations. Therefore the following enquiries investigate these matters. This enquiry links to Objective Two and 'quality of experience' because if CAS participants identify the presence of undesirable risk, then it may be assumed by coastal providers that this undesirable risk will have a negative effect on the total CAS experience. This will be important when coastal managers begin to structure planning strategies for the CAS aspect of the coastal zone, because the presence of undesirable risk should be removed to ensure that future coastal planning encapsulates the concept of sustainable development.

### ***The risk factors perceived by CAS participants when they take part in their activity***

Objective Two considers the total number of participants and their craft from all the individual CAS classifications that could operate in a set perimeter before an individual's perception of their 'quality of experience' begins to reduce. The answers to this enquiry will also assist Objective Three because if the CAS participants' perception of quality begins to reduce through interaction with others this would lead to the assumption that

undesirable risks are beginning to increase. Therefore this study may use these answers, first, as a measure of quality and, second, as a measure of risk.

#### **4.5.4 Aim One: Objective Four**

**To accumulate information in relation to the variability of understanding by CAS participants of issues relating to policies and management programmes that regulate CAS.**

Chapter Three discussed issues relating to coastal planning and policy. Section 3.7 stated clearly that the Sports Codes of Practices (SCP) that are ascribed to individual CAS should be disseminated through the sport-specific governing body. This raises a number of important enquiries.

#### ***CAS participant knowledge of sport codes of practice (SCP)***

If CAS participants have different levels of knowledge relating to the sporting codes of practice then this has implications for coastal and sports managers. They may be able to improve the methods for CAS management by, for instance, demanding that CAS participants have affiliation to their sport-specific national body. The development of guidance in this respect will assist the implementation of Health and Safety operational rules. Visitors to the region who may wish to casually participate in CAS will have special needs and the identification of these 'casual' (i.e. non-affiliated) participants may well have a useful function in site management.

#### ***Membership of National Governing Bodies (NGB) and other organisations by CAS participants and the effectiveness of 'recognised' NGB as conduits for the dissemination of CAS codes of practice***

Knowledge of these organisations will assist coastal managers and sports providers to assess the value of the various organisations for communication with the CAS participant. It was discussed in Section 3.7 that recognised NGB are used for the dissemination of the

SCP associated with individual CAS. The answers to this enquiry will indicate to what extent these particular NGB are currently active in the CAS landscape. Membership of an NGB will be examined as a function of age, ability, type of CAS and visitor-resident categories. Age has relevance to membership of CAS organisations because of cost, accessibility, value, age rules etc. Uneven membership in relation to ability or type of CAS would suggest that CAS organisations are not functioning with equal effectiveness across the whole range of participants. And if visitors to the region have a lesser understanding of NGB codes of practice than residents, it would indicate that NGB are not interacting effectively with these 'casual' participant groups. The answers to these enquiries will give insight into the effectiveness of the appropriate NGB.

***CAS participant knowledge of policy regulations and government-derived structures that are in place to manage, regulate and guide activities that take place on the coastline***

Section 3.8 discussed the types of government policy that currently influence the activities that take place on the coastline, in particular the Local Government Bylaw control mechanisms. This strand of enquiry will provide coastal managers with reliable information about the effectiveness of the current 'educational' systems that disseminate the policies, regulations and management structures ascribed to CAS. From this information coastal managers and policy makers should be able to improve the methods they use to disseminate CAS policies, regulations and educational packages. This in turn will assist in the creation of Health and Safety guidance and will ensure the special needs of visitors to the region (who may wish to participate casually in CAS) are satisfied.

The issues will be examined in relation to participant age, ability and type of CAS, visitor-resident category and site. Age is relevant because it has implications concerning the accessibility and perceived value of the information. Ability perception parameters may affect the information gathering of a participant because the more experienced participants

are more likely to value specialist knowledge of their CAS and this could suggest that certain lower ability ranges may need to be targeted for educational purposes. Some CAS sports may have more methods for the dissemination of CAS educational devices than others, whereas some types of CAS may not have systems of effective education. If CAS participants cannot identify a regulating management structure at a site when there is one present, then this would suggest that the regulating management structure has become ineffective.

## **4.6 Objectives and Measurable Items (Stage Two)**

As stated earlier the information derived from the literature review, the 1998 pilot study, the 1999 LA data collection and the results of the year 2000 field work all suggested that organisational barriers exist within the arrangement of bodies that have an interest in CAS. To answer this question four research objectives were defined for the examination of the organisations that govern CAS.

### **4.6.1 Aim Two: Objective One**

#### **Identification of the marine and maritime coastal stakeholders that have an interest in Coastal Aquatic Sports**

This enquiry developed the literature review, and Stage One of this study by revealing the main organisations that govern CAS and/or the marine environment. By probing deeper into these organisations the individuals that were most representative (with regard to CAS) could be identified. This enquiry also sought to identify from the perspective of organisational representatives the alternative organisations that they perceived had an impact upon the governance of CAS. This examination would reveal any pockets of information that may have been overlooked or omitted from the enquiry and provide a clearer understanding of the perspectives and linkages of those that provide for CAS governance. This would show if barriers and issues do exist within the managerial framework that underpins CAS.

#### **4.6.2 Aim Two: Objective Two**

##### **An assessment of the responsibilities of central government and their attached agencies, and external organisations**

By developing the questions associated with Objective One further it was hoped that the representative perceptions of the responsibilities of central government, their attached agencies and alternative CAS management organisations could be identified. This line of enquiry would inform an assessment of the overall CAS governance landscape. For instance, answers to these enquiries would reveal if overlaps of responsibility exist between the organisations within the CAS management hierarchy and if perceptions of CAS responsibilities by the representatives of organisations that provide for CAS governance are homogeneous throughout the management structure. Additionally this enquiry would also begin to reveal the strengths in the linkages between the different organisations that govern CAS and provide information that may expose barriers and/or issues that may be restricting the development of CAS governance and be causing frustration at CAS grass root. However these enquiries would also go some way to identify possible solutions to some of the issues raised during Stage One of this work.

#### **4.6.3 Aim Two: Objective Three**

##### **An assessment of the awareness of marine stakeholders of current government management initiatives and structures**

This line of enquiry extended the issues revealed during the year 2000 survey (Stage One). For instance, enquiries of this nature would reveal CAS governance representative perceptions of quality of experience criteria and of issues of coastal loading, risk and safety and of the ways that CAS management structures have or have not incorporated these concerns into their management initiatives.

Answers to these investigations would reveal if organisations within the CAS management hierarchy have full knowledge of the relevant management initiatives and structures and if

awareness is homogeneous throughout the CAS management structure. Furthermore these enquires may identify communication barriers between the different organisations that govern CAS, reveal the strengths in the linkages between the different organisations that govern CAS and pinpoint the barriers that are causing for frustration at CAS grass root level.

#### **4.6.4 Aim Two: Objective Four**

##### **An assessment of the awareness of marine stakeholders of the regulation, control mechanisms and facilities that currently govern coastal sports**

Answers to this enquiry would allow an assessment to be made of the understanding and awareness of representatives from the organisations that govern CAS understanding of CAS regulation and control mechanisms. This would expand on the information gleaned from Stage One of this work, which suggested that CAS regulation and control mechanisms might be a cause of conflicts and frustration at grass root level. This enquiry would identify differences of perception and/or areas of strength and weakness in the CAS governance hierarchy with regard to CAS regulation/control awareness and knowledge. This in turn would reveal issues and barriers that may be the cause of CAS problems at grass root. Additionally these enquiries would go some way to identifying possible solutions to some of the issues raised during Stage One of this work.

#### **4.7 Methodology, Design Instruments and Operational Definitions**

A quantitative and qualitative survey was used for the 1998, the year 2000 fieldwork (Stage One) and the research carried out in the year 2002 (Stage Two). This survey method is described as producing a 'structured or systematic set of data' (De Vaus, 1996) and defined by Denscombe (1998) as a method of obtaining data for mapping or otherwise to view comprehensively and in detail. For Stage One and Stage Two purpose-designed questionnaires, self-administered on a face-to-face, basis were used. This approach was



selected as the optimum tool for investigating CAS 'quality of time' and CAS management structures by which facts, attitudes and behaviours can be measured. May (1995) suggests that a purpose-designed questionnaire should be created specifically to suit the study's aims and the nature of its respondents and that it needs to be clear, unambiguous and uniformly workable. Its design must also minimise potential errors from respondents, interviewers and coders. Because people's participation in surveys is voluntary, May (1995) extends this definition by suggesting that a questionnaire should help engage interest, encourage co-operation, and elicit answers as close as possible to the truth.

Justification for selecting a survey strategy for this work is to be found in the comments by Williams and May (1996) who suggested that survey strategies have their roots in the positivistic tradition. The Neuman (2000) remark that "Surveys produce information that is inherently statistical in nature . . . Surveys are quantitative beasts." endorses the suggestion that surveys can indeed produce a set of 'true', precise and wide ranging laws of human behaviour. But the significance of the human element in the research suggested that the research design should also include the capacity to measure social attitudes. This is particularly important because the measurement of social attitudes will be inherent in the development of the Stage One survey and therefore this issue will require special consideration:

"If social attitudes are to be conceptualised as partially integrated habit sets which will become operative under specific circumstances and lead to a particular pattern of adjustment they must, in the main, be derived from a study of human beings in actual social situations". (Williams and May 1996)

The use of the survey in the form of a questionnaire does, however, have a number of limitations. The first is the indication that cultural perceptions moderate the meanings and interpretations respondents attribute to survey questions. "Persons acquire from their social and cultural groups a context for interpreting the environment that may largely define how

they comprehend and deal with it.” (Angel and Thoits, 1987; (cited in Horm, 1997)). For instance, the ontological standpoint of a young person immersed in youth sub-culture may differ somewhat from an older person immersed in the responsibilities of raising a family. These processes of interpreting the environment may otherwise be defined as “cultural syndromes” (Triandis 1990 (cited in Horm, 1997)) and can have an influence on the interpretation of survey matter. These cultural syndromes are present in the concept of ‘cultural complexity’ and are identifiable through areas that encompass “dimensions of individualism versus collectivism, emotional control versus emotional expressiveness and masculinity versus femininity” (Horm, 1997). This cross-cultural variability will potentially be a limitation of the survey outputs.

There are a number of ways in which a survey may be accomplished and data collected, for instance, self-administered questionnaire, telephone survey or the face-to-face interview. It is the cognitive variables that are involved in questionnaire administration that have led to the decision that for both the CAS participant Stage One (2000) and the CAS governance Stage Two (2002) a face-to-face interview would provide the optimum vehicle for data collection.

#### **4.7.1 Limitations and Questionnaire Management**

Differences between participants in the different types of CAS reinforced the notion that two arrangements of presentation (visual and oral) should be offered to the year 2000 respondents in order that the questionnaire might be standardised and reduce the limitations associated with the single presentational approach. For example Schwarz (1997) suggests that the sensory channels in which questionnaire materials are presented have an effect on the manner in which the respondent may answer the questions. For instance, the self-administered questionnaire is dependent on the visual and reading perception of the respondent. The respondent is not ordered in any way, and can wander at

will around the questionnaire, in contrast to the face-to-face survey in which an order dependency may be established, maximizing the influences of design.

Time also limits the implementation of a survey because it can have an effect on the responses of participants to questionnaires. For instance, Kruglanski (1980) and Krosnick (1991) (cited in Schwarz (1997)) suggest that 'time pressures interfere with extensive recall processes (*memories*) and increase reliance on simplifying processing strategies' (*guessing*). However, moments of 'silent reflection' are noted by Schwarz (1997) as indicating that the interviewer is maintaining a certain level of respondent attention. Although time pressure is a factor for consideration in the case of the face-to-face interview, Schwarz (1997) suggests that the factor of time pressure is 'midway' when balanced alongside alternative methods of survey collection. The most prominent effect of time pressure on respondents in a questionnaire survey is the telephone interview and the least in a self-administered survey.

Non-verbal communications are important in the use of questionnaires and in this respect one of the integral elements of the face-to-face interview is the availability of non-verbal communications. Non-verbal cues serve to "indicate mutual attention and responsiveness and provide feedback as well as illustrations for what is being said (in the form of gestures)" (Schwarz, 1997). The interviewer is also able to build rapport with the respondent and monitor the respondent by way of non-verbal expression. This will help avoid de-motivational elements associated with a respondent misunderstanding the question.

#### **4.7.2 Respondent Concepts and the Perceived Success of an Interview**

The success of a face-to-face interview is respondent dependant with factors such as accessibility, cognition and motivation fundamental to respondent dependency. This factor

may limit the questionnaire response and may cause bias. For instance if the respondent does not have the necessary information he/she cannot answer the question and will therefore reply in an inadequate manner. Kahn and Cannell (1957) (cited by Moser and Kalton 1971) further divide inadequate response into five distinct areas: partial response, no-response, irrelevant response, inaccurate response and verbalised response. Issues such as the loss of memory, emotional stress or simply a grammatical mis-understanding by the respondent to the question asked, may prompt one of the responses identified above. Stage One and Stage Two questionnaires incorporated a number of identifying respondent features that should ensure that the interviewer will draw responses only from those persons that fit the identified description. This will enable respondent accessibility and reduce inadequate responses.

The respondent-dependent concept 'cognition'; suggests that the respondent needs an understanding of the requirements of the interview. Moser and Kalton (1971) note that the respondent needs to establish a means of deciding what relevant information to give, how completely he/she should answer, and in what terms of reference the answers should be expressed. This means that the interviewer had to ensure that the survey aims and objectives were made clear to the respondent at the onset of the interview and that issues were continuously clarified throughout the survey procedure.

Respondent 'motivation' is directly associated with the respondents' desire to co-operate effectively and to answer accurately. Lack of motivation can lead to a distortion of answers and Moser and Kalton (1971) note that these are 'no better than no answer at all'. Moser and Kalton (1971) also suggest that the interviewer should attempt to reduce the determinants of decreased motivation on the respondent's behalf. These would include the desire to get on with other activities, embarrassment at ignorance, dislike of the interview content, fear of the consequences and suspicion of the interviewer. To reduce the

limitations related to the 'motivational' concept the interviewer focused on increasing respondent motivational factors, such as curiosity, loneliness, politeness, a feeling of duty, keenness to help the sponsor of the enquiry and a liking for the interviewer.

Survey questionnaires contain different types of instruments with the ability to measure many variables and/or test a number of hypotheses. Neuman (2000) noted that surveys may request information that embraces behaviours, attitudes/beliefs/opinions, characteristics, expectations, self-classifications and knowledge. This suggests that chosen instruments must be employed in a manner that will ensure that the framework of the questionnaire remains clear and respondent friendly.

#### **4.7.3 Operationalisation of the Research Design and Definition of Terms**

Social surveys can be limited because of ambiguity caused by a lack of clear definition and by poor terminology. Hence it was determined that certain terms within the research should be clearly defined. This reduced bias caused by a respondent/interviewee misunderstanding or misinterpreting a term.

Sport is clearly a very important term to CAS and the Council for Europe in 1993 insisted that along with the term 'physical activity' a number of motivation elements should be present, either individually or together, for the operationalisation of the term 'sport' (Sport England, 2001). These are defined as fitness, mental well being, social relationships and competition.

Culture will also require a clear definition because the term has elements of uncertainty in its meaning. The term social relationship in sport implies that friendship and gatherings are a motivational factor for partaking in a sport. However, this determinant could limit the questionnaire design. It is suggested by May (1995) that human beings uniquely use

complex systems of linguistic signs and cultural symbols to indicate to themselves and to others what they intend/mean to do. Moreover, that human activity is not behaviour, but an expression of meaning that humans give via language to their conduct. This emphasises that human beings use culture as a tool for communication. This places an importance on culture's role for social interactions. Therefore applying the term culture in the survey will expand on the definition of 'social relationship' and allow for the delimitation of research design. This will be achieved by offering respondents the term culture as an alternative to the term of social relationship. For the purpose of this research the term 'culture' will be defined as a body of external social activities that are directly associated with participation CAS.

Oppenheim (1966) noted that the term 'you' and 'have' are notorious for their ambiguity in questionnaires and 'are best avoided or else defined'. Therefore the research design defined that the term 'you,' for the purpose of any inquiry, was only applicable to the respondent and had no relevance to any other persons.

The definition of collision for the purpose of this study was defined to include all types of contact (both intentional and unintentional) between a person and/or craft with any third parties.

The pilot study revealed that the term hostility could be subdivided into three clear groups. It was determined that sub-categorising the term hostility would increase the variables available for the data analysis and therefore the following definitions were adopted in the research design.

- Verbal hostility, is defined as the use of unacceptable language by another person, and which is directed at the respondent causing them mental distress.

- Hostile gestures, defined as body movements that contain negative symbolic significance directed at the respondent by another person, resulting in mental distress.
- Physical hostility, i.e. when a respondent has experienced a physical attack from another CAS participant which has resulted in both bodily and mental distress.

Coastal loading can be defined as the social capacity of a coastal environment to accommodate activities associated with CAS.

The area of a football pitch was used as a reference during the 1998 pilot study and the year 2000 fieldwork and each respondent was requested to 'visualize water space the size of football pitch'. The use of this particular term is important because it allowed respondents to identify the spatial extent required for their individual CAS. Coastal geomorphology is predominantly determined by the speed and distance traveled by natural forces accumulating uninterrupted over large expanses of water; "seaward" has few or no physical boundaries. This suggests that the zones relevant to CAS also have few or no physical boundaries as these zones essentially embrace the tidal strip to seaward.

Bale (1998) suggests sport is almost invariably characterized by rigorously enforced spatial boundaries. Because CAS operates primarily in open coastal waters where precise sporting spatial parameters are not enforced, this could be a problematic concept for this study. This is chiefly because the respondents' perceptions of safety require a common spatial boundary from which the entire sample perceptions can be referenced.

With this in mind, attention was given to selecting an unambiguously defined sporting parameter to be visualized by respondents as the required spatial boundary. The sample sites were selected to encompass specific CAS attractors that are renowned as popular

visitor locations. Therefore there is an increased implication that persons selected to be representative of the CAS population will include a number of those that were visitors to the area. Thus, the selected spatial boundary or 'medium' to be used for measurement must have the versatility to be acknowledged from both regional and national viewpoints and a capacity to include those from international sources.

The superimposition of an artificially created boundary onto the CAS locations allows perceptions of quality of experience and issues of safety of individuals to be compared and measured. Both football and cricket are sports with fixed boundaries and 'contained' in space. The final decision to employ the use of the 'football pitch' is justified through the high rate of both British and international media coverage (especially television) given to the sport during the last decade, and also to the increasing interest in the sport by women. These two factors suggest that football is generally more prototypical to the British population than other sports. This has led to a further assumption that the respondents have knowledge of football and therefore have the ability to mentally superimpose a 'football pitch size' spatial boundary onto a section of coastal water. To ensure that the respondents share a common knowledge of pitch size the interviewer used pre-measured *in situ* land-based boundaries to reinforce understanding. For instance, the beach car park, which is used by CAS activists at the Marazion sample site, was paced out and identified as being a similar size to that of a football pitch. Therefore the question, "Can you visualize water space the size of football pitch?" was supported by, "This (with indication) particular car park is approximately the same size." If the respondent still had difficulty in understanding the statement the interviewer walked around the car park and repeated the question.

The pilot study also indicated that speed and size of craft would markedly affect the respondent's perception and answers. Taking into account the size of a football pitch and



the size and speed of many CAS individual craft, it was deemed necessary that no craft over 10 m in length should be incorporated into the inquiry. This allowed a size capping for those respondents with smaller craft or those with no craft at all. However, taking speeds into consideration, further measures needed to be taken to validate the boundaries, because fuel propelled craft can attain much higher speeds than other types of propelled craft. The speed attainment factor proved problematic and was a potential limitation of the research design. To overcome this it was suggested to the participants in these type of craft that, whilst traveling at high speed within the set boundaries, the boundaries in this case would travel with them. However, all those chosen by the respondent as compatible from individual sports would also remain in that confine and travel with them. It was noted that in some cases respondents would perceive that their particular CAS would not come into contact with one or a number of the alternative sports suggested, therefore in the event of such a response a 'not applicable box' was provided.

This particular 'in depth' enquiry was confined to the respondents of the Stage One survey, although the results of the Stage One analysis (inclusive) were discussed with the respondents of the Stage Two survey.

#### **4.7.4 Question Design Instruments and Limitations**

Interview questionnaires can contain two specific types of question. Oppenheim (1966) categorizes these as either "open" or "closed". A closed type question can be explained as a question containing a formula that assists the respondent in his answer. This formula may request the respondent to answer a question with a simple, 'yes/no', or it might direct the respondent to select from a number of answers, which might be provided orally by the interviewer or by a prompt card/slide.

There are advantages and disadvantages with the closed type question; the advantage is that they are quantifiable and favourable for pre-coding, thus analysis and comparability are more easily carried out. However, Oppenheim (1966) suggests that closed questions may produce a loss of respondent spontaneity and expressiveness and may potentially introduce bias. This is perceived to occur by the forcing of respondents to choose between given alternatives and by making them focus on alternatives that might not have occurred to them.

May (1995) points out that when a closed question is presented to a respondent the answers provided must fulfil the following two specific criteria, 'mutually exclusive' and 'exhaustive'.

Closed questions limited the Stage One (2000) questionnaire design but they were formed from the analysis of the data derived from the pilot study which ensured that the selected categories would cover all possible replies from the sample. This was important because research findings by May (1995) suggest that the failings of closed questions are more likely to be due to omissions of an important choice category rather than to the use of the form in the first place. These types of question were not applicable in the Stage Two-questionnaire design because of the qualitative nature of the survey. However open type questions were used and these are discussed below.

The open type question differs from the closed question by offering the respondent more freedom to activate self-thought in their answers. These types of questions are described by Oppenheim (1966) as 'free response questions' and need to be recorded in full. Because of their qualitative nature and the fact that answers are usually information rich these types of question were used for the 1998 pilot study and the year 2002 CAS governance field work. Qualitative open questions allow the respondent to submit their

own ideas on a subject and allow the interviewer opportunity to probe for further information, thus enriching and deepening the line of inquiry.

The disadvantage in using open questions is that the richness of answers may be lost during the coding operation; thus the reliability of the responses is acknowledged by this work to be somewhat limiting. Oppenheim (1966) states that momentary lapses by the respondents or feelings of reticence or the inability to put ideas into words can also cause the omission of significant points.

#### **4.7.5 Question Order and the Use of Buffer Questions**

The structure and question order of the Stage One and Stage Two questionnaire designs demanded special attention. This is because evidence presented by Cantril (1944) suggests that question order may affect the refusal rate or influence the answers obtained (cited in Moser and Kalton, 1971) and this may be a possible limitation of the research design.

The organisation of survey questions in a face-to-face interview situation is far more influential than that of a self-administered questionnaire. This is because subsequent face-to-face interview questions cannot influence the responses given to the preceding ones. It is therefore critical that the queries in a face-to-face questionnaire are ordered in such a manner that the influence of the preceding question on subsequent questions is controlled.

In order to reduce any potential bias it was decided that 'funnel sequencing' (Kahn and Cannell, 1957; (cited by Moser and Kalton, 1971)) was the best method for generating respondent interest and gradually encouraging respondent focus. Moser and Kalton (1971) describe funnel sequencing as starting with a broad question about a subject from which one could then begin to narrow down to specific issues. This particular design instrument also allowed for inverted funnel sequencing. In both the CAS year 2000 questionnaire and

the year 2002 survey work inverted funnel sequencing was used to underpin the overall design. This functions by permitting a range of issues to be exposed and explored and then focuses on encouraging the respondent to form a considered opinion on the broader question (Moser and Kalton, 1971).

Although funnel sequencing provides a systematic manner by which questions can be ordered, attention must also be applied to the potential effect of funnel sequencing on respondents. For instance a questionnaire may become biased because of the effects of the content of some questions on subsequent ones. Wanke and Schwarz (1997) suggest that the influence of the preceding question on the respondent performance is dependent on the 'reach' of the question and that this can have an effect at the comprehension, retrieval, judgement formation, formatting and editing stages. This 'ambiguity' is noted as creating many problems in questionnaire design, particularly with the question order.

Studies carried out by both Higgins (1989) and Wyer and Scrull (1989) (cited in Wanke and Schwarz, 1997) indicate that ambiguous information is interpreted in terms of the concept that is most accessible (provided that the concept is applicable).

Therefore, the question/response of a previous query may provide the concept from which a respondent will draw in order to answer a question of an ambiguous origin. Higgins, (1989) (cited in Schwarz, 1997) noted that the 'crossing of the Atlantic in a sailboat' could be perceived by respondents to be either 'adventurous' or 'reckless' depending on whether the concept had been activated by a preceding task.

The acknowledgement that the order of questions can affect the respondent response has led to the decision that buffer questions should be introduced where necessary in the Stage One and Stage Two questionnaire designs in an attempt to reduce the question order effect.

#### 4.7.5.1 Buffer Questions

Buffer questions may be used for a number of different questionnaire purposes; only those having relevance to the current study will be discussed. For the CAS year 2000 survey a buffer question was used to influence the interview structure because Schwarz, (1997) suggests that conversational norms can limit the questionnaire design. For example,

“Having just answered a question about freedom of speech for the Klu Klux Klan, respondents interpret a subsequent general question about freedom of speech as referring to other speakers.” (Schwarz, 1997:129).

A study carried out by Ottati (1989) (cited in Schwarz, 1997) demonstrated that when a buffer question separated two questions ‘perceived conversational belongingness’ is disrupted and this results in an assimilation effect. Thus Schwarz (1997) concluded that *unrelated* buffer items may change the interpretation of a general question by reducing the likelihood that the preceding question is perceived by a respondent to belong to the same conversational context.

#### 4.7.6 Rating Scales

A number of questions in the Stage One questionnaire employed the use of rating scales to measure respondents’ attitudes. These types of questions were not used during the Stage Two questionnaire design because the survey was semi-structured, qualitative in nature and developed through the use of open-ended questions. However, it was important for Stage One that a method was identified to increase the reliability of answers and reduce the biases that are associated with the measurement of attitude and beliefs. Krosnick and Fabrigar (1997) highlight the importance of rating scales in survey designs and consider them to be omnipresent in contemporary surveys measuring subjective phenomena such as

attitudes and beliefs. They are further noted as playing a central role in empirical studies.

Sarantakos (1998) notes the following reasons for the employment of rating scales:

- High Coverage: Scales help to cover all significant aspects of the concept.
- High Precision and Reliability: Scales allow a high degree of precision and reliability.
- High Comparability: The use of scales permits comparisons between sets of data.
- Simplicity: Scales help to simplify collection and analysis of data.

(Sarantakos, 1998)

Scales allow a specific topic to be examined from several different perspectives; the topic is then not dependent on one question as a reliability indicator. Typically scales are formatted into a set of pre-coded statements that allow the respondent to answer by the selection of one of a number of provided responses.

The CAS year 2000 questionnaire identified the three topics of sport, quality and risk as requiring specific examination using a scaling instrument. There are a number of different scaling techniques available to the researcher and after careful consideration, Likert scaling was selected.

#### 4.7.6.1 Likert Scaling

The Likert scaling system is a group of details that are of equal value and a 'set of response categories constructed around a continuum of agreement/disagreement to which subjects are asked to respond' (Sarantakos, 1998). These types of scales are noted by Oppenheim (1966) to be very successful for the measurement of attitudes.

"Reliability of Likert scales tends to be good and, partly because of the greater range of answers permitted to respondents, is often higher than that of corresponding Thurstone scales; a reliability coefficient of .85 is often achieved." (Oppenheim, 1966:200)

Oppenheim noted that the Likert method had limitations because scaling can result in problems with 'technical reproducibility', although this is predominately with the scoring system attached to the scales. However, Oppenheim suggested that by attention to the *patterns* of response the problems of technical reproducibility might be addressed.

Likert scales are employed to measure 'attitude' and these are derived from social intercourse and contain elements of subjectivity. Williams and May (1996) suggest that the social sciences are value laden and, unlike their physical counterparts have starting points that are both subjective and normative. Notably it is the subjectiveness of social attitudes that produce problems in questionnaire design.

Attitudes are also influenced by extraneous factors. For instance, in this particular study the weather may influence answers because it was noted in the 1998 pilot study that the weather could alter the 'feel good factor' of the respondents and this in turn may also affect their answers.

The research questions that used verbally labelled Likert scales also attempted to take account of levels of attitude by using two different approaches (bipolar and unipolar) in order to reduce potential bias.

#### 4.7.6.2 Bipolar – Unipolar Scales

Scales used to measure attitude have two distinct methods. First, bipolar scales are associated with the construct of attitude, and range from the extremes of positive and negative with an identifiable neutral midpoint. Second, unipolar scales, although also associated with the constructs of attitude, focus on those that are specific to the respondents' perceptions of importance. The scales range from zero to a maximum and

contain no precise midpoint. Krosnick and Fabrigar (1997) suggest that bipolar scales are scales reflecting two opposing alternatives with a clear conceptual midpoint and that unipolar scales are scales reflecting varying levels of some construct with no conceptual midpoint and with a zero point at one end.

However an argument that the inclusion of a mid-point may result in cognitive 'laze' by the respondent, is noted by both Krosnick (1991) and Lyberg and Kasprzyk (1997) to be likened to 'survey optimising'. This is a way that the respondent can avoid the mental tasks associated with answering efficiently whilst still appearing to behave responsibly. (Krosnick and Fabrigar (1997) describe this as 'survey satisficing'). Furthermore, Kalton *et al.* (1980); Bishop (1987); Ayidiya and McClendon (1990) (cited in Lyberg and Kasprzyk (1997)) noted that the results from empirical research suggest that, although people seldom spontaneously offer midpoint responses when they are not legitimated substantial proportions select them when they are included explicitly in questions.

Considering the above it is the potential reduction of measurement error and the positive influence of a midpoint for reliability and validity that are the justifications for including a neutral midpoint in the 'bipolar' scaled questions. It was decided that if no midpoint were offered then the respondent might be forced into making a non-rational decision and this may have affected the data, and consequently the results.

#### **4.8 Identification of the Year 2000 Fieldwork Sample Sites**

The information gleaned from the 1998 and 1999 studies suggested that the sample sites selected for the year 2000 survey should demonstrate clear evidence of visitor activity and



indicate that CAS activities occur at the location. It was believed that by using this selection criterion the year 2000 survey could be optimised.

Unfortunately because of financial constraints and the wide geographical dispersion of CAS populations, the eligible sites for survey were limited. For instance the literature review revealed that many national and international sites including Poole Bay (Dorset) experienced CAS conflict. It would have been very useful to incorporate locations such as these into the year 2000 sample frames but travel costs were prohibitive. Therefore this is accepted as a limitation of the year 2000 fieldwork.

Because of this a sampling procedure was used which selected clusters from a criteria list and then a random sampling technique was used within each cluster to select the population for the survey.

#### **4.8.1 Method of Sampling**

Sampling is used as an efficient method for identifying a representative CAS participant population.

Moser and Kalton (1971) suggest that the sample can be consciously or unconsciously influenced by human choice and that this happens if the sampling frame does not cover the population adequately, completely or accurately; or if some sections of the population are impossible to find or refuse to co-operate. It is accepted that the identification of the year 2000 sample sites to be used in the cluster analysis was influenced by the researcher's choice. However, because the clusters were selected rigorously using information gleaned from the literature review and the 1998 and 1999 studies, it was hoped that bias was minimised and that valid generalisations can be made from the data.

De Vaus (1996) describes the probability sample (the method from which the CAS 2000 sample frame was produced) as a sample where each person in the population has an equal, or at least a known, chance (probability) of being selected.

Previous fieldwork steered this study to adopt a macro- and micro- approach for the sample frame. This utilised a number of sampling tools and allowed this study to identify the most representative population. This was achieved by using probability related multi-stage sampling (noted by De Vaus (1996) to be the most effective device to initiate a macro-sampling frame) because it allows this study to use geographical clustering.

#### **4.8.2 Multi-stage Sampling**

Multi-stage sampling is an extension of cluster sampling and is also known as 'area sampling'; Moser and Kalton (1971) identify this type of sampling frame as one which is based on maps, rather than a lists or registers. The 'maps' in this study are particular geographical coastal locations. One of the benefits of using this type of sample frame is that the researcher may remain cost effective by reducing travel and time constraints. Furthermore Moser and Kalton (1971) point out that clustering takes advantage of existing groupings of the population and that clusters do not usually contain equal numbers. Denscombe (1998) suggests that the underlying aim is to get a 'representative cluster' whilst retaining commitment to the principles of random selection and the laws of probability.

The continuation of cluster sampling into a multi-stage sample is explained by De Vaus (1996) as being the initial selection of larger sample areas and then progressively smaller areas within the larger ones are sampled.

The literature review revealed that it is possible to divide the coastline into a number of 'general cluster types' or units of enquiry, each of which can contain one or a number of physical geographical distinguishing factors associated with coastal locations. This division of the coastline into cluster types means that positive intra-class correlations can be expected. This is because the populations that exist within each of the identified clusters are more likely to be like each other than other clusters. Information from the literature review, informal discussions with BSO the data from the 1998 pilot study, the Barrington study (1976) and the 1999 LA investigation all suggested that conflicts were more apparent at multi use sites and during periods of high visitor activity. Additionally the financial constraints associated with travel also provided a third criterion that the selection of sites should not exceed a 50 mile radius from the research base.

For the purposes of this research, three physical geographical clusters are classified which embrace activities and types of facility that are known to attract CAS participation. Therefore it was decided that each sample site should contain one or more of the following cluster types identifiers.

- **Coastal locations that include a port or harbour containing facilities for CAS that experience high visitor numbers, where multi-use CAS is known to occur and located within 50 miles of the research base.**
- **Coastal locations incorporating beaches that experience high visitor numbers, CAS natural or artificial landing /launching facilities for CAS, where multi-use CAS is known to occur and located within 50 miles of the research base.**
- **Estuarine Locations that experience high visitor numbers where multi-use CAS is known to occur and is located within 50 miles of the research base.**

### 4.8.3 Description of Cluster One

Coastal locations that include a port or harbour containing facilities for CAS



Illustration 4.1 Falmouth Marina 2002 : Cornwall Picture Company (2002)

Ports and harbours support a number of maritime operations and these can include both commercial cargo movements and active fishing fleets. However with the increase in CAS there is now a great deal of activity in ports and harbours associated with CAS (see for example, Illustration 4.1). These activities consist of purpose built marinas down to simple moorings. There are also particular infrastructures in place that allow CAS participants water access for their craft, dry dock facilities and other maritime support industries. Most types of CAS are found in Cluster One locations although the activities such as keelboat sailing that require the extensive infra-structure provided by these sites are more likely to frequent the cluster than other CAS.

### 4.8.4 Description of Cluster Two

Coastal locations that incorporate beaches that have CAS natural or artificial landing /launching facilities



Illustration 4.2: Windsurfing  
School Cornwall Picture Company (2002)



Illustration 4.3: Fistral Beach Surfing  
British Surfing Association (2003)

The term ‘beach’ is somewhat complicated, as it is perceived to be a variable landform and can be described as dynamic by nature. King's (1972) definition of beach as 'an accumulation of loose material around the limit of wave action' is adopted for the purposes of this research. The beach is also perceived by Collard (1997) to extend from the lowest level of low tide beyond the high tide marks to the upper point to which storm waves can fling material. Furthermore, the sediment that makes up a beach can comprise of shingle, sand or both, is determined by the characteristics at a location and may be sheltered from the wind by cliffs or otherwise exposed. These factors all contribute to the multitude of parameters that make the beach a distinctive and dynamic environment.

The results from the 1998 pilot study and the LA data collection in 1999 support the observation that these types of location generate specific CAS populations. These types of CAS participants find the beach clusters ‘ideal’ for access to the coastal zone for aquatic activities that use light or highly versatile equipment in which to participate in their sports. For example, Illustration 4.2 and 4.3 show the light and versatile CAS activities of windsurfing and surfing. These activities are very numerous at beach locations.

#### **4.8.5 Description of Cluster Three**

Estuarine locations are links between the coasts and river systems and are identified under a number of headings such as rias, coastal plain estuaries, bar-built estuaries, complex estuaries, barrier beaches, linear shore sites, and embayments (DoE, 1995a). The different types of heading indicate that estuaries can differ both in properties and appearance although - with the exception of characteristics associated with the depth of water at any estuarine location - 'types of estuary' are of no relevance to the research. The cluster has been selected for the research because of the many aquatic activities that occur at estuarine locations. However estuaries often contain harbours and/or ports.

As stated earlier the selection of sample sites was geographically limited because of financial constraints and Figure 4.2 clearly shows they have therefore all been located within the South West peninsula. Therefore this geographic boundary will restrict the limits of the year 2000 survey and will require some discussion because the South West peninsula will need to match with the rest of the criteria discussed earlier in order for the optimisation of the survey.

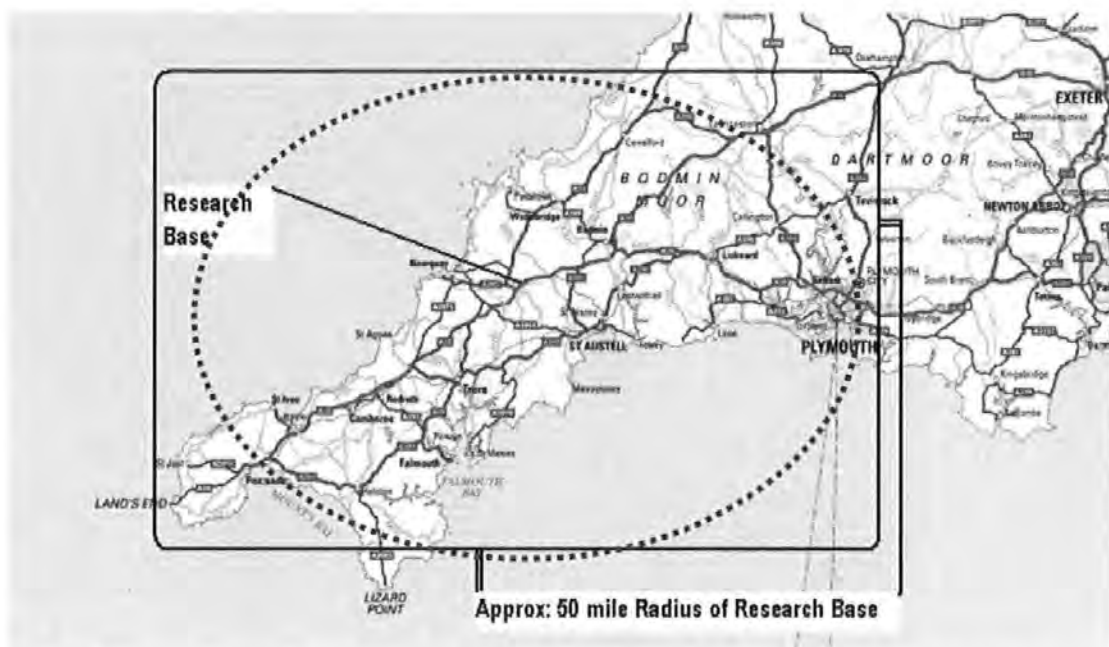


Figure 4.2 The 50 Mile Radius Adjoining the Research Base (Multi Map, 2003)

#### 4.8.6 The South West Peninsula as the Focus Study Area

The South West Peninsula encompasses the counties of Devon and Cornwall, is noted to provide one of the UK's major tourist attractions and contains plenty of opportunity for a CAS participant. This is important because evidence of tourism and high visitor numbers is one of the sample selection criteria. The area has outstanding coastal landscape value and a diversity of wildlife actions have been instigated to ensure that, via conservation mechanisms, a great deal of the coastline is protected under National Heritage agreements. The total Devon and Cornwall coastline extends 1554 km (*as measured at high water mark*) (ALC, 2000).

Winds prevail from the South West and these often generate large waves. Draper (1991) (cited in ALC (2000)) suggests that wave heights have increased progressively between 1962 and 1984. This will have implications when the safety aspects of CAS are assessed. The south coast of Devon and Cornwall contains a number of large bays and there are five functional ports associated with the peninsula's south coast: Penzance, Falmouth

(Illustration 4.4), Fowey, Plymouth and Teignmouth (ALC, 2000). However nearly all the coastal towns associated with the coastline of this peninsula have a harbour or some type of boat facility (ALC, 2000). Figure 4.2 shows that the 50 mile radius from the research base encompasses the majority of Cornwall and extends over the Devon border to include Plymouth but does not encompass the whole of the Devon area. Hence the main discussions here will focus on sites within the 50 mile radius.



Illustration 4.4: Falmouth Docks 2002

Cornwall Pictures Company (2002)

Devon and Cornwall contain a number of estuaries. ALC (2000) noted that the total estuarine area accounting for some 15,856 ha. The largest are the Exe and Tamar estuaries and these also have the largest urban populations. Estuaries in the South West are classified as rias (drowned river valleys) and these are unique to the South West. The largest ria is located at Falmouth and on the north coast the only ria to be found is the Camel (ALC, 2000). Estuaries are important to this study because they often contain ideal access points for CAS participants. These types of CAS infrastructures are located all around the South West and range from small and basic to the larger, multiple facilities such as boat repair yards. The harbours, estuaries and small bays that are to be found in the region offer the ideal launching spots for many types of CAS. For instance, as an area for diving, the South West region BSAC (1993) noted that because of dive popularity,



those organising dives during peak summer periods should investigate the expected diving activity at a South West site to avoid congestion.

The combination of Atlantic Ocean and English Channel weather and tidal patterns that are found in the South West Peninsula, in conjunction with the warmer and clearer waters also makes them ideal for CAS.

Additionally, the launching sites available in the South West are not restricted to sites supplied with a vehicle access. The PWC, due to its size and versatility, has the ability to enjoy access to the water edge using a number of different options; for instance, it may be launched from a larger craft anchored inshore, or even carried over restrictive obstacles.

It is evident that geography of the South West Peninsula has a number of ideal CAS environments that allow all the CAS identified for this particular study to take place. Therefore the next stage of the sample selection was to identify the three cluster types from within the 50 mile radius selected for the study. The informal interviews with Beach Safety Officers and the 1998 and 1999 data collections informed this selection process. The criterion for sample site selection stated that sites should evidence high visitor numbers; because the South West peninsula has such high visitor numbers this criterion is considered to have been met.

The LA data collections (1999) revealed that Newquay, Marazion, Perranporth, Holywell Bay, St Agnes and Falmouth were all subject to intensive CAS multi-use activity and were all showing signs that conflicts were occurring during participation. Because this data was current, this identified that these particular sites had a high priority for further investigations. Furthermore because Perranporth, Holywell Bay and St Agnes were all located within a short distance of each other it was further determined to select only one of

the sites by an assessment of which site contained the majority of the cluster descriptions described earlier. This revealed that the St Agnes would be the optimal site for the year 2000 data collection. Chosen sites are discussed below.

#### **4.8.7 Newquay**

The literature review revealed that Newquay (the surfing capital of Europe) is very popular for multi-use aquatic activity and the LA data collection supported the findings that Newquay experienced large visitor influxes during the summer months. Newquay contains a small harbour which services some pleasure boats and a small fishing fleet and has a number of recreational beaches the most popular being Fistral which is internationally recognized as having the desirability factors of a surfing competition beach. As discussed in Chapter Two, surfing includes the longboard, shortboard, bodyboard and other forms of surfing such as windsurfing, surf-kayaking and wave-skiing, all of which were noted in the LA data collection at Newquay. Alderson (1994) identifies Cornwall as undoubtedly the home of British surfing, with Newquay (Figure 4.3 and Illustration 4.5) providing the hub around which it revolves. However, Alderson (1994) identifies a further 68 'ideal' surfing locations in Cornwall and 29 in Devon. Because this study has decided to concentrate on sites where CAS multi activities are known to take place, Newquay clearly fits all the criteria noted earlier and geographically corresponds with the descriptions of cluster one and cluster two:

- Coastal locations that include a port or harbour containing facilities for CAS
- Coastal locations incorporating beaches that have CAS natural or artificial landing /launching facilities for CAS.



St Agnes fits with both the cluster one and cluster two descriptions. It is located on the North Coast of Cornwall and consists of a small cove with a small but functional harbour. It is noted to be naturally hazardous due to the regular and intense tidal movements and this has created for CAS participants many life threatening situations. The number of CAS craft registered as operational at the site during the 1999 LA data collection is high in comparison to the size of the location.



Figure 4.4 Location of the St Agnes Sample Site . Multi Map (2003)



Illustration 4.6 St Agnes (spring 2003) (Sumser-Lupson 2003)



Figure 4.5 Identification of the Marazion Sample Site. Multi Map (2003)

#### 4.8.9 Marazion near Penzance

Marazion is located some 3 miles away from Penzance (Figure 4.5; Illustrations 4.7 and 4.8) and has a long sandy beach with easy natural access to the water's edge (cluster two). It is exposed to prevailing winds and has very few launching facilities and is therefore ideal for smaller wind powered craft. Penzance itself has a large harbour (cluster one), hence the immediate water space around Marazion could be classified as commercially active. Marazion itself contains few facilities but does have a large car-park which is a focal point for CAS activists. The LA data collection showed that sail/power boating, jet-skiing, water-skiing, sub-aqua diving, windsurfing, canoeing, swimming, surfboarding and bodyboarding were all present at the site. Windsurfing was particularly active because records have shown over 50 windsurfers in the water at the same time. Observations made by the lifeguards showed that conflicts were a regular occurrence and they also noted that conflict levels rose during intensive CAS commercial activity such as the hiring out of CAS associated equipment.



Illustration 4.7

Marazion Waters between the main land (Right) and St Michael's Mount (Left)

Cornwall Picture Company (2002)



Illustration 4.8

Marazion Beach looking out to St Michael's Mount. Cornwall Picture Company (2002)

#### 4.8.10 Plymouth and Falmouth

Newquay, St Agnes and Marazion all fit the descriptions given for cluster one and cluster two. However the description provided for estuarine location (cluster three) suggest these are extremely popular for CAS activity so because of this and other factors it was decided that Plymouth (Figure 4.6; Illustration 4.9) as an estuarine location should also be included into the year 2000 fieldwork. Although information had not been collected from this particular site during the LA data collection, information from the Falmouth site (Figure

4.7) had shown that conflicts were occurring in the estuary. Hence it was important that the year 2000 study used a similar site for comparison. Furthermore both Newquay and St Agnes are located on the North Coast of the South West peninsula whilst Marazion is located at the most Southerly edge or/bottom (Figure 4.5). In order to ensure geographical balance it was thought appropriate that the sample locations should incorporate two sites from the South coast of the South West peninsula.

Both Plymouth and Falmouth offer many CAS associated infrastructures including a whole range of hospitality facilities. Plymouth, for example, has 5 major marinas with permanent and visitor berths. These facilities offer many alternative CAS opportunities including power-boating, windsurfing, canoeing, sailing, diving, surfing and swimming.



Illustration 4.9

Plymouth Waterfront Facilities 2002 :

Cornwall Picture Company (2002)



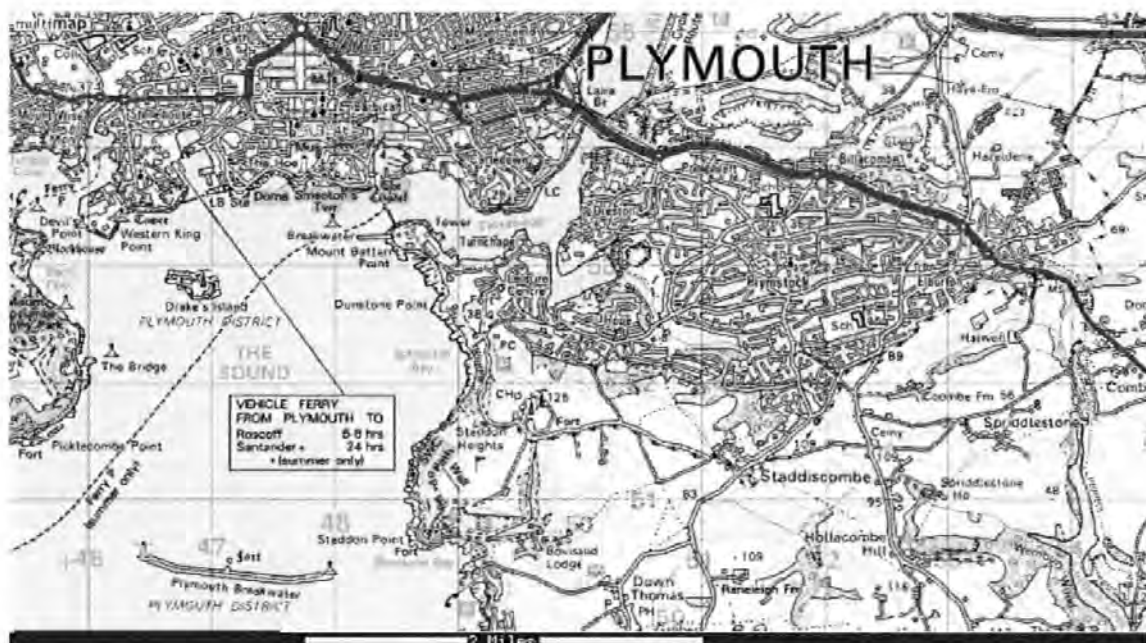


Figure 4.6 Overview of Plymouth Estuary and Port . Multi Map (2003)



Figure 4.7 Overview of Falmouth Estuary and Port. Multi Map (2003)

The LA (1999) data collection showed that one of the Falmouth beaches had consistent use by small sail and powerboats, personal water craft, wind-surfers, canoes and surf ski craft along with bodyboarders and swimmers. However, the associated marinas also contributed to these numbers. For instance, during the eclipse event (1999) comments recorded by



lifeguards emphasised the number of boats moored and mooring around the beach. Many conflicts were observed and recorded, these regularly included power-boats as well as personal water craft and during July over 1,500 preventative situations were recorded. Hence Falmouth is an important site for further investigation. Through the inclusion of the similar estuarine site of Plymouth it was thought that the analysis of collected data could be extended.

Figure 4.8 shows the selected sample sites relative to each other.

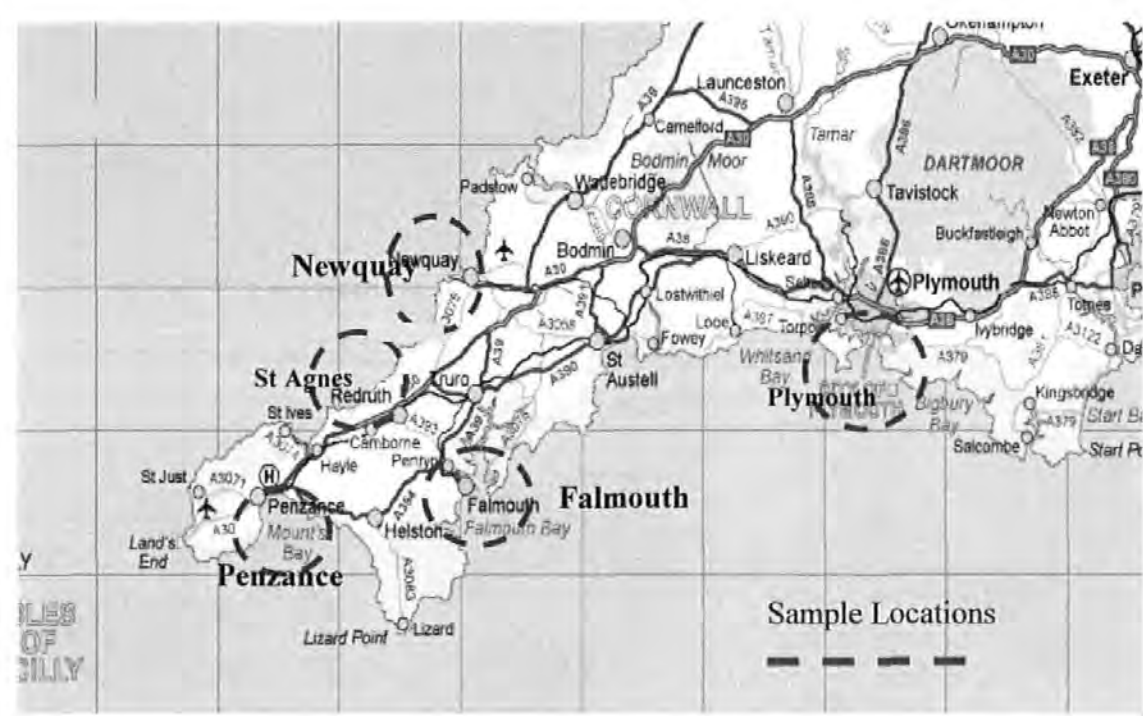


Figure 4.8 South West Peninsula: Location of Sample Sites. Multi Map (2003)

#### 4.8 11 Identification of the Year 2000 Sample

Having selected the sites for the sampling frame the second step was to identify the methodology for the population selection. For this a systematic procedure was considered to be the most appropriate tool. Hammond and McCullagh (1978) describe this as a sample in which selection is made from the population at regular intervals.

Initially attention was given to the fact that one of the criteria for the sample frame was that each site should experience high visitor numbers. This factor was considered to have possibly caused some bias because there is a difference between visitor numbers at the weekend and weekdays. For instance short breaks usually occur over the weekend. This factor may have also affected the visitor-to-local ratios. It was therefore decided that during each of the four pre-determined months set aside for the survey each site should be visited on at least two weekdays and two weekend days. By employing this approach it was hoped that any bias could be minimised.

Informal test runs of the year 2000 survey and data from the 1998 pilot study indicated that the survey was likely to take anything between 35-minutes to 50 minutes per individual to carry out. This suggested that decisions relating to respondent selection would need to be relatively quick in order that the time available could be used as efficiently as possible. The 1999 LA data collection revealed that CAS participants start activities as early as 09.00 and activities were recorded up to 18.00 at which point lifeguards finished their day. However the literature review along with informal observations made by the researcher indicated that during the summer periods CAS participants continued in their activities until nightfall. Hence a decision was made to continue with interviews where possible up until 21.00.

It was considered likely that the populations to be surveyed would be randomly distributed within the CAS landscape (although this may be within specific CAS environments). In particular the fact that each of the sample sites received high visitor numbers increased this possibility. However it was also very important that those surveyed were CAS participants. Therefore it was decided that the interviewer would need to observe each of selected populations taking part in a CAS activity for at least 2-3 minutes. Informal interviews with Beach Safety Officers and LA lifeguards suggested that it would take a

minimum of 2-3 minutes for a CAS participant to gain access to the shore. The researcher moved forwards up the beach/ marina/harbour in a methodical manner prior to the selection of each respondent. It was hoped that this would reduce the potential for human bias because it ensured that the interviewer did not unconsciously prioritise those being selected for the next interview. After each interview and movement to a new selection site the interviewer would observe CAS activities for at least 10 minutes during which time assumptions could be made that would determine which participants were most likely to be coming out of the water. The third CAS participant observed taking part in CAS and coming to or landing on the shore was selected from these and, in the case of a refusal the method was repeated. There was no discrimination made between participants or the type of CAS activity.

#### **4.8.12 Identification of the 2002 Sample: Governance Interviewees**

The year 2002 governance interviews are an important element of this work and it was critical that the main organisations that govern CAS or who have an interest in CAS were correctly identified. The literature review, Beach Safety Officers informal discussions and results from the 1998 pilot study and 1999 LA data collection all informed the identification procedure. For instance, Section 3.6 identified the central government departments of the DCMS, DEFRA and DfT as having relevance to issues of CAS governance. Information gleaned from Stage One suggested that the roles and responsibilities associated with National Governing Bodies might be associated with issues of CAS governance. Furthermore Section 3.8 indicated that government agencies and alternative safety institutions provide vital safety elements for the development of CAS and that these in turn direct CAS governance (these points were re-emphasised during Stage One study). It was very important that each of the organisations was acknowledged as contributing to CAS governance at the executive management level, hence the geographical location of the selected organisations headquarters played no part in the

selection procedure. Because of financial constraints and the fact that the geographical location would not provide a cap for travel expenditure it was decided that a maximum of 10 representatives would be selected and these would be chosen from central government departments, agencies, LA, NGB and alternative institutions. A selection criterion for the Stage Two survey and an acknowledged limitation of the research design was the time period (May and September 2002) within which the interviews would need to take place. Detailed examination of the organisations' management structures allowed for the representative individual/s that had some direct responsibility for CAS governance to be identified. From this information appointments were made and the interviews carried out.

#### **4.9 The Selection and Use of Statistical Tests for Quantitative Data Analysis**

Human attitude and perceptions are issues that are known to be subjective. Because of this and the social nature of Stage One and Stage Two surveys special attention was given to the tools employed for the questionnaire analysis. Because over 200 respondents had been interviewed during the Stage One survey and the survey was of a mixed methodology (qualitative and quantitative) the analysis of the data required a different procedure than the data derived from the Stage Two<sup>1</sup> (qualitative) survey. Hence, the Statistical Package for Social Scientist (SPSS) was used. SPSS is perceived by Cramer (1998) to be the most effective computer-driven statistical method for analysing social research data and recognised as the leading data analyses package in the field during this study period.

##### **4.9.1 Data Coding**

Data preparation first involved an examination process to identify missing or incomplete questionnaires. The next step taken was to begin to categorise and code the data, a process

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<sup>1</sup> The methodology used for the analyses of the Stage Two survey is discussed at the latter of this chapter.

whereby the respondents' answers and statements are translated into numbers. Sarantakos (1998) notes that coding should include categories that are “accurate, unidimensional, mutually exclusive and exhaustive” and (it) can be performed as a pre-coding or post-coding exercise(s). Missing cases would require a special code because they are recognised as a separate category; however the year 2000 questionnaire recorded no missing categories. Furthermore because the year 2000 study offered a number of dependant and independent variables for the management of the data, these needed to be categorised into nominal, ordinal, interval and ratio measurement classifications to enable the easier management of the data.

#### **4.9.2 Descriptive Statistics and Tests of Significance**

One of the objectives of the data analysis was to ensure that relationships between the variables were examined and explored as thoroughly as possible. For instance the identification of 'outliers' (unusual values such as single observations) at an early stage would reduce the need for repeat analysis because some statistical tests are very sensitive to these types of values.

The analysis started with descriptive statistics and was then followed by exploratory statistics. Graphs were used to inform the next stage of the investigation by exposing 'trends and patterns' that could be further analysed by employing the appropriate statistical tests. This was important because complex relationships measured in simple terms may indicate that an important relationship exists when in fact further testing may reveal that the relationship could have been spurious. The 0.05 probability level was used for significance testing.

A number of different types of statistical test were used in the analysis of the year 2000 data because the data consisted of a number of different types of variable. Hammond and

McCullagh (1978) suggest that the choice of tests for comparing data sets depends on the characteristics of the data, the relative 'cost-effectiveness'<sup>2</sup> of different tests, and assumptions that can be made about the background populations from which data are derived. For instance parametric tests require assumptions about the distributions underlying the data. In contrast non-parametric tests do not need these types of assumption (Bakeman, 1992). Chi Square, Mann-Whitney and *t*-tests were used as appropriate.

#### **4.10 Qualitative Data Analysis**

The year 2002 governance survey used a semi-structured face-to-face survey and the questions delivered to the respondents were mainly of the qualitative open ended type (section 4.7.4). This approach was used to develop a deeper understanding of the CAS governance underpinning frameworks. Because the data was mainly derived from a qualitative methodology and the respondent numbers were low, the method of analysis differed from the 2000 field work data.

The relevance of data obtained via a qualitative methodology depends on the purposes of the study. Tesch (1990) suggests that there are three basic orientations for qualitative studies: language-orientated approaches, descriptive/interpretative approaches and theory-building approaches. The last mentioned of these was used as the impetus for the 2002 governance survey because the theory building approach is used to identify connections between social phenomena. For instance, Stage One of this work suggested that some of the problems occurring at CAS grass roots may be caused by issues associated with management at the executive level.

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<sup>2</sup> The 'cost' in this context means the necessary effort in data collection and calculation. Effectiveness means 'power'-i.e. the ability to

The main focus in qualitative research is the data itself because it is rich in content and retains breadth and depth and because it encourages respondents to enlarge on answers to questions and thus this approach may reveal important detail that might otherwise be suppressed. Hence the data collection methodology is a critical element of the research design because a totally unstructured approach could result in a deluge of data, some of which may have no relevance to the research enquiry. This is why it was decided that the governance interviews retained a semi-structured approach in that questions were delivered within a framework similar to that of funnel sequencing (section 4.7.5). For instance, issues for discussion were broken down into sub-sections and if during the discussions a sub-section was overlooked the interviewer would prompt that enquiry. Because of this the interviews developed within a guided format. National Governing Bodies (NGB), sport code of practice (SCP), Government policy and CAS management structure, CAS participation, the locations where CAS occurs, the CAS activities themselves and coastal loading had been revealed as CAS issues during Stage One of this work and these were presented to the interviewees for discussion. This allowed data to be ordered in a more systematic manner. However a possible cause of bias will be because there is always a degree of reduction in qualitative research.

#### **4.10.1 Methodology for the Qualitative Data Analyses**

Sarantokos (1998) provides a five-point model (i) transcription, (ii) checking and editing, (iii) analysis and interpretation, (iv) generalisation and (v) verification) for the analysis of qualitative data and this method was used for the analysis of the year 2002 stakeholder qualitative interviews. Each of the model stages described by Sarantokos is linked to the way that the 2002 data was analysed.

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discriminate correctly between a true and false hypothesis (Hammond and McCullagh, (1978).

### *Transcription*

The year 2002 governance interviews were recorded onto audiotape. Hence the first step was to transcribe word for word the information from the tapes into a typed format. Following this the manuscript was cleaned and edited. Features such as repetition, coughing or interruption by a third party were removed from the scripts until only the relevant interview material remained.

### *Checking and Editing*

Because the interviews were conducted in a semi-structured manner the replies made by the interviewees were simply catalogued and could be easily placed in context to the study. To assist in the analysis each respondent reply or information string was given an individual number. One sentence may contain two or more information strings. For instance, Robin Rafeal (MCA) stated that the (1) MCA had a primary role to make sure vessels are safe and that the (2) environment is protected (safer ships and cleaner seas).

### *Analysis and Interpretation*

A data reduction and analysis procedure was undertaken whereby categories were identified which loosely identified with general themes or trends. For instance, one general theme was made because the majority of interviewees identified the lack of marine expertise to be an issue associated with many of the CAS management issues. Hopper (1986) describes this as a process of winnowing data. The emphasis on selecting one poignant exemplar after another as all of the significant 'wheat' (i.e. that data which is deemed significant or exemplary) gets separated from all of the non-significant "chaff" (i.e., that data which is determined to be non-significant or redundant).

The research objectives were used to identify the different analytical categories such as the identification of marine and maritime stakeholders, assessment of organisational



responsibilities, CAS governance organisations' awareness of current government management initiatives and structures, and their awareness of regulation, control mechanisms and facilities that currently govern coastal sports. Issues revealed from the year 2000 field work were used to channel these objectives. For instance, the interviewees' assessment of their organisational responsibilities with regard to CAS participation.

### *Generalisation*

The survey used a semi-structured approach and, because the objectives of the survey had incorporated the issues developed from the Stage One survey, these topics were used to inform the question categories and this in turn developed the coding.

Through a detailed examination of the transcripts the coding was refined and the individual interviews could be generalised. For instance all the interviewees pertaining to management issues noted a 'lack of marine expertise' and many other topics could be linked into this e.g. the interviewees' perception of current management practices. Once the differences and similarities were identified, typologies could be developed and other specific themes (such as communication barriers) became evident. These were linked to CAS organisation lack of marine expertise, blurred roles and responsibilities and breaches in communication between the organisations.

### *Verification*

As a quality control mechanism, and to ensure that the interpretations made from the transcripts were valid, each of the transcripts was rechecked.

The presentation of qualitative data is important because it should not only reveal the results of the survey but should also draw attention to the interpretations made from the

transcripts. A combination method was used for the presentation of the qualitative data from the year 2002 governance study in that interpretations and themes derived from the transcripts were supported with data excerpts aligned with descriptions, explanations and analysis during the discussions. The provision of background information (data grounding) with the presentation (e.g. including information from Stage One study during the discussions) ensured that the data could be contextualized with the work that had already been carried out.

To further assist the presentation of the results of the year 2002 governance work the results and discussions are presented in a sequential order and this to some extent mimicked the semi structured design of the interview procedure. For instance, the Stage One study provided a framework of issues for examination and by also using this framework as the thrust for discussions the results could be discussed in a logical fashion. For example, the discussions of National Governing Bodies leading into discussions on Sport Codes of Practice.

#### **4.11 Summary**

Chapter Four has discussed the mixed method (qualitative and quantitative) design that has been used for this study and the fact that this method is noted to be akin to intra-method triangulation. Section 4.2 reviewed the way that the research design strategy was used as the underpinning framework in that it employed a structured and layered analytical approach. The aims and objectives of both Stage One and Stage Two were then discussed in Section 4.4. This described how the Stage One aim and objectives had developed from the information derived from the literature review, the 1998 pilot study and the 1999 LA data collection, whereas the aim and objectives of Stage Two had also developed from these sources but had developed to a greater degree because of the additional information made available from the results of the year 2000 survey. Section 4.7 clarified the

methodology, design instruments and operational definitions of the quantitative and qualitative survey that were used for the year 2000 fieldwork (Stage One) and the research carried out in the year 2002 (Stage Two). Additionally, Section 4.7.4 discussed the question design instruments and their limitations. The cluster method that was used to identify year 2000 fieldwork sample sites was explained in Section 4.4 and also discussed was the selection procedures and the manner by which the procedure was informed. The year 2002 governance interviews were also discussed and the criteria that was employed to select the CAS governance representatives was detailed. Section 4.9 identified the selection and use of statistical tests for quantitative data analysis (descriptive statistics and tests of significance) and Section 4.10 identified the methodology that was used for the analysis of the year 2002 governance surveys.

Hence, because of the rigour that was applied to the methodology of the both research studies ((i) the field situation and (ii) the CAS governance structure) this could provide a clear framework for reference.

## **CHAPTER FIVE: THE FIELD SITUATION. DATA ANALYSIS**

### **5.0 Introduction**

Chapter Five will discuss the results from the analyses of the Stage One investigations inclusive of the pilot study (1998), the LA data collection (1999) and the main survey carried out in the year 2000. In view of the fact that the 1998 and 1999 investigations were designed primarily to inform the development of the year 2000 survey the results of these investigations will be discussed briefly.

### **5.1 Results of Sub-Section One: Pilot Study Year 1998**

The 1998 pilot study sample size was small (28) because the main aim of the survey was to produce a snapshot of the CAS environment which could inform the design of the year 2000 research. Therefore the 1998 survey was designed to provide guidelines for the development of the year 2000 survey. Because of the limited size of the survey, the data could not usefully be used for significance testing. However the results were informative and clarified many of the issues discussed during Chapters One-Three of this study. More importantly the pilot study revealed issues that CAS participants perceived to have been important during the study period and it was this information that provided the impetus for continuing with the year 2000 survey.

Descriptive results from the pilot study are referenced by the appearance of the relevant question number next to the result, for example (Q1). The 1998 fieldwork questionnaire is in Appendix 1.1a.

SPSS was used to analyse the pilot study. In total 28 CAS participants from the longboard, shortboard, wind surf, sailing, powerboat and bodyboarding were interviewed (Q1).

The age range of those interviewed was between 26-45. On average the interviewees had spent some 9-12 years in their CAS (Q2). Thirteen classified themselves as experienced, 9 classified themselves as intermediate and 7 classified themselves as beginner (Q4). The typical time that the respondents allotted to their CAS was around 1-3 times per week depending on sea conditions (Q5). Of those interviewed 17 were visitors to the area, whilst 11 were locals (living in Cornwall).

Fourteen of those interviewed preferred to take part in CAS alone, 12 favoured a group CAS activity (Q6). Respondents had on average 10 friends that enjoyed the same activity as them (Q7). National Governing Bodies (NGB) featured as a very low priority for the CAS participants; 27 of those questioned did not have any membership (Q8).

There are a number of shared views associated with the reasons why participants take part in CAS. Personal satisfaction was perceived to be very important by all respondents; escapism, way of life, and social interaction featured as important with 24 in agreement. However, there was a negative response by the respondents in relation to competition and to the influence of their friends being involved in CAS. Nineteen and 22 respectively noted that these were not reasons for taking part in CAS. A mixed opinion existed in relation to the importance of CAS participation for exercise and to the importance of health in becoming more skilled at their specific CAS (Q11 a-i).

### **5.1.1 Risks Associated with CAS**

Whilst taking part in their CAS, 24 of the respondents reported having had a collision with other CAS participants (Q14), on average 10 impacts per annum (Q16). Damage to self through these contacts was detailed as lacerations, bruises or blows (Q18) whilst damage to equipment included rips, scrapes and breakage (Q20). Reporting of the collisions was minimal with 24 never reporting at all (Q21). The hospital was noted as the location where reports had been lodged and 7 of the respondents who sought medical advice on 1-3 occasions had done so at the hospital. However, 21 of the participants had never sought medical advice.

Twenty-one respondents perceived that a reduction of their CAS quality time can be connected to occasions when they had interacted negatively with other CAS participants (Q22), 10 stated that overcrowding was a factor and 8 noted attitude (Q23). An increase in a perception of risk was associated with interactions with other CAS participants by 24 of the respondents (Q25).

Twenty of the respondents had encountered hostility whilst they had been participating in their CAS (Q27) and 15 said that hostility between CAS participants was becoming more frequent (Q29).

Hostility is apparent in many forms and 14 of the respondents had experienced hostile language, 15 hostile gestures and 2 actual physical hostility (Q28).

Participants were also asked if “. . . they had ever demonstrated hostility to another CAS participant.”(Q30). Ten agreed that they had used hostile language (Q31). When further

questioned as to “What type of action?” by another CAS participant would cause them to react with hostility, 18 of the respondents agreed that ‘being in the way’ could cause a hostile reaction, whilst 14 highlighted ‘attitude in the water’ as being a very important instigating factor (Q32).

### **5.1.2 Conclusion**

The results of the 1998 pilot study indicated that there are common factors between participants of different CAS and that there are similar reasons as to why they take part. These results required further examination in the year 2000 survey because these observations are supported by the Section 2.3 which suggested that participants who take part in 'adventure activities' differed psychologically from those who take part in more passive type sports.

The results also suggested that there was notably little interest by CAS participants in appointed NGB and this point informed the development of the year 2000 survey because the UK government has recommended that the Sport Codes of Practice for CAS participants should be disseminated through these organisations. This factor also influenced the decision that the year 2000 study should also investigate if CAS participants understood and recognised in-situ CAS management structures or if they possessed knowledge of Government management mechanisms. This was deemed an important avenue for exploration because the pilot study clearly indicated that the mechanisms provided for the management of CAS might not be functioning effectively. The reluctance revealed from the survey in the reporting of CAS incidents by CAS participants also led to an assumption that the total number and overall effects of CAS collision are not accurately recorded and therefore the true picture of CAS accidental contacts is unknown. This detail prompted the decision to carry out the 1999 LA data

collection exercise which concentrated on direct experience and observations from surf lifeguards.

The emphasis on 'quality' by participants in CAS and their perceptions of overcrowding indicated that at times CAS saturation levels are probably being reached and possibly exceeded. Hence, it was decided that the year 2000 survey should pay particular attention to this issue and this decision was underpinned by an assumption that CAS saturation may be linked to the participant perception of quality decline whilst participating in an activity. Furthermore this assumption may also correspond with the noted growth of participant hostility. The fact that hostility is recognised by all the respondents of the 1998 pilot study re-emphasised the need for further investigation within this framework. The indications of overcrowding and the attitude of others in the water provided by the open-ended questions allowed the main survey to focus on these issues to further these tentative results.

The use of open-ended questions for some of the pilot study enquiries informed the construction of the main survey (Section 4.7.3) and allowed it to present more focused questions to the respondent. It is evident that despite its small sample size the pilot study performed in a satisfactory manner and that it had indicated the CAS issues that required further investigation.

## **5.2 Results of Sub-Section Two: LA Data Collection 1999**

The Sub-Section Two LA data collection was a very important element of the Stage One study because it expanded upon the information generated from Sub-Section One. This



was because the data collected permitted lifeguard observations to be recorded and the results provided an excellent frame of reference for a further survey in 2000.

Due to the variations in the quality of the beach data collection from beach-to-beach in 1999, only beaches generating a substantial amount of consistent data were examined. Each beach was given an individual assessment because it was thought that this would emphasise the individuality of CAS locations and activity.

### **5.2.1 Carrick District Council**

Carrick District Council lifeguards completed 67 craft assessment sheets and 72 weekly log sheets. Data were collected between May and September 1999. The numerical entries made on the craft assessment sheets were filled in with great clarity and this means that an excellent analysis could be made. However, written observations relating to craft incidents were quite sparse. The weekly log sheets contain a great deal of information, although it is evident that there was confusion between the terms 'preventative advice' and 'surfcraft warning' and consequently the two terms have been placed together as 'preventative advice'.

#### **5.2.1.1 Gyllyngvase Beach Falmouth**

Craft Assessment Sheets = 17 weeks      Weekly Log Sheets = 16 weeks

Craft assessment sheets show a consistency of use by small sailboats, powerboats, jet-skis wind-surfers, canoes and surf ski craft along with bodyboarders and swimmers. Bodyboarder and swimmer numbers rose dramatically during the holiday months of July and August, peaking at 75 and 200 respectively. The hours between 14.00 –17.00 are the most popular times for CAS participation at the site; sunshine is also a stimulus for participation particularly with swimmers and bodyboarders. The event of the 'eclipse' (11.8.99) stimulated CAS activity because the recorded comments of lifeguards

emphasise the number of boats moored and mooring around the beach. Other observed and recorded CAS problems include, “ Powerboat washed onto the beach by swell, 3 teenage lads attempted with difficulty to re-launch,...and jet ski problems endangering swimmers. . . .”

Inflatable dinghies are evidently problematic and caused the majority of rescues. Preventative advice was recorded between 10 – 100 times per day and this remained consistent during the beginning and later parts of the data collection. However in the month of July a dramatic rise in the number of preventative advice<sup>1</sup> situations was recorded reaching a peak of 1,500 on one specific occasion.

Conclusion: Gyllyngvase is an intense multi-use CAS site with 8 different types of CAS activity being recorded. The large number of preventative advice instances recorded by the lifeguards, and the references made to power craft operating in or close to swimming zones, suggest that the site is problematic and will require further investigation

#### 5.2.1.2 Holywell Bay

Craft Assessment Sheets = 16 weeks Weekly Log Sheets = 17 weeks

Craft assessment sheets show a consistency of use by canoes and surf skis along with surfboarders, bodyboarders and swimmers. Surfer, bodyboarder and swimmer numbers rise dramatically during the holiday months of July and August. The totals of bodyboarders recorded are equal to or (frequently) exceed the total number of swimmers in the water. For instance, on 30.7.99 at 17.00 there were 300 bodyboarders recorded along with 200 swimmers. The hours between 14.00 – 17.00 are indicated are the most popular times for CAS participation at the site and the presence of sunshine positively

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<sup>1</sup> Preventative advice is verbal information given by a lifeguard to person/s when actions by that person/s are judged by the lifeguard to be developing into a risk situation.

affects the swimming participation levels. Evidence suggests that swell size is not a factor for bodyboard and swimmer participation in Holywell Bay.

Comments relating to craft incidents are recorded as surfboard injuries. These include an incident of a torn shoulder, an incident of a thigh gash that required hospital treatment for stitches, and an incident of a cut hip. Other noted incidents were CAS participants attempting to paddle to an outcrop of rock some 2 miles off shore. Rescues and assisted rescues rose during the months of July and August with preventative advice incidents averaging at 450 per day.

Conclusion: Holywell Bay is a multi-use CAS location. The focus of use is by swimmers, wave-powered craft and the occasional visit by human powered craft. The interesting aspect of Holywell Bay is the number of bodyboarders that frequent the location, often exceeding the swimmer numbers. This may be influenced by a number of factors which further investigation may reveal. For instance, is the presence of so many bodyboarders dominating the location? The recorded surfboard injuries are of great interest although information as to how these injuries have occurred is omitted from the data i.e. self-inflicted or by another. Therefore it is difficult to ascertain if a surfboard related CAS problem exists.

#### 5.2.1.3 Perranporth Beach and Perranporth Sands

Craft Assessment Sheets = 21 weeks    Weekly Log Sheets = 23 weeks

The craft assessment sheets indicate heavy CAS activity use by surfboards, bodyboards and swimmers particular to Perranporth beach. For example, on 16.7.99 at 14.00 there were a total of 60 surfboards, 42 bodyboards and 150 swimmers recorded in the water. This particular location is very popular for surfing by comparison with other sites.

Windsurfers are also recorded as sporadically visiting the location. There is also intense use by bodyboards and swimmers, with numbers increasing during the months of July and August, suggesting tourism effects. Recorded observations by lifeguards focus primarily on the surfers and bodyboard participants:

- 3.7.99 'Bodyboarders and surfboarders having no knowledge where to surf.'
- 25.6.99 'A lot of bodyboarders drifting.'
- 11.7.99 'Bodyboarder stuck in rip.'

Preventative advice peaked between July and August at 150 per day. Surfcraft warnings were omitted from the collected data.

Conclusion: Perranporth is a multi-use CAS site. The focus of use is by swimmers and wave-powered craft with the exception of occasional visits by windsurfers. There is evidence that the recorded CAS activities that take place at the location are problematic, and there is further indication that the perceived 'lack of knowledge' by the participants of the activities is a major contribution to this. This site will require further examination.

#### 5.2.1.4 St Agnes

Craft Assessment Sheets= 10 weeks    Weekly Log Sheets = 10 weeks

Craft assessment sheets indicate that St Agnes has intense CAS activity from canoe, surfboard, bodyboard and swimmer participants; there is also considerable use by sailboats, powerboats and occasional use by wind surfers and jet-skis. The use by surfboarders and bodyboarders is notably intense, often outnumbering swimmers. For example, at 14.00 on 15.7.99 lifeguards recorded canoes (2), surfboards (40), bodyboards (18) and swimmers (48). The numbers recorded rise during the months of July and August, as does the number of times preventative advice given by the lifeguards. Surfcraft warnings have been recorded by the lifeguards stationed at St Agnes and these

warnings equate to half of the recorded preventative advice incidents given in July. Observations recorded by the lifeguards focus upon the problems of CAS participants being cut off by the tide or drifting out to sea in rip currents.

Conclusion: St Agnes is a cove location with a small functional harbour. The cove is an intense CAS multi-use location. This is because 10 different types of CAS activity were recorded during the May data collection. The interpretation of observations made by lifeguards would suggest that a 'lack of knowledge' by CAS participants is a major contribution to multi-use activity problems. This 'knowledge problem' is increased by the naturally hazardous coastal conditions evident at the site. The high number of craft relative to the size of the location indicates that the site is craft dominated. This may be perceived to be problematic because other activities may have been displaced.

### **5.2.2 Restormel Borough Council Beaches**

Restormel surf lifeguard service controls seven of the beaches in the Restormel Borough. The service has contributed greatly to the data collection by completing the Weekly Log Sheets on a daily basis. The lifeguards at the Mawgan Porth site completed the craft assessment sheets and provided data relating to actual craft in the water. The alternative Restormel site data were collected by the Beach Safety Officer (BSO) using a different method. This is described below.

By continuously visiting the sites at specific times in the day during May–September, the BSO calculated the average number of persons and craft in the water. These calculations were made using lifeguard perception of when the coastal water is Quiet, Average, Busy and Very Busy. These perceptions were then used as an averaging factor. The categories listed above were recorded on the Weekly Log Sheet and then the lifeguard used personal perception to select and register the most descriptive term for each day. The Weekly Log

Sheets provided by the Restormel lifeguards recorded surfcraft warnings and preventative advice.

#### 5.2.2.1 North Fistral

Weekly Log Sheets = 20 weeks

The CAS activities recorded at North Fistral are longboards, shortboards, bodyboards and swimmers and, on occasion, surf-skis. At 'Very Busy' times the typical CAS participant numbers were surfboards (250), bodyboards (220) and swimmers (150). On an average day these figures were reduced to 80, 60, and 70 respectively.

On 12.6.99 lifeguard recordings showed that an individual experienced a serious injury due to another person's surfboard. Other recorded observations are very limited. (This may require further investigations as the numbers of recordings tail off as beach and water populations rise). On a number of occasions the beach was classified as having an Average occupancy whilst the water was classified as Busy. This indicates that the water is a key factor for many people being present at that site. Specific 'surfcraft' warnings are prolific throughout the recorded weeks, becoming more intense with greater usage. Records of how busy the water was corroborate this information.

Conclusion: It is evident from the number of CAS participants that North Fistral is an extreme multi-use CAS location, although the types of CAS activities are limited. Surfboarding and bodyboarding are the dominant activities with swimming identified as the lesser activity. This dominance may be perceived as problematic. Water space at the site has become congested by surfcraft and this observation is supported by the recorded surfcraft warnings that dominate the overall preventative advice figures. Increased

activity during July and August is indicative of visitor activity, some of who may have had little or no knowledge of the CAS activity in which they were engaged.

#### 5.2.2.2 South Fistril

Weekly Log Sheets = 20

The CAS activities recorded include long and short surfboards, bodyboards and swimmers and, on occasion, canoes and surf-skis. At its Very Busy times the above CAS participants numbered surfboards (50), bodyboards (100), swimmers (60), canoe (2) and surf-ski (4) whilst on the average day these figures are reduced to 40, 15, 10, 1 and 2 respectively.

South Fistril and North Fistril are situated within a very large cove and the two beaches are at either end. Geographically the North Fistril beach is closer to the town of Newquay. There are similar attributes to be found at the two locations. For instance, there is strong evidence to suggest that CAS is a strong attraction for human attendance at both sites. For example on 3.7.99 South Fistril beach was identified as Quiet whilst the water was identified as Very Busy. Although written observations by the lifeguards are limited, the lifeguards did record craft related human injuries that aggregated at 80. Surfcraft warnings greatly exceeded preventative advice and were prolific throughout the 20 weeks study, becoming more intense with high water activity. The holiday months also contribute to the growth of CAS participation. Sunshine does not show as a factor for CAS participation at the location, although there is evidence to suggest that it had an effect on the beach population.

Conclusion: South Fistril has similar characteristics to North Fistril although it is plainly more desirable to alternative types of CAS activities. It is a multi-use CAS location with

a very high participation rate and there is an indication that this site acts as a catalyst for human presence in the water. Evidence also suggests that the site manifests distinctive problems relating to the interaction of CAS activities, as data show craft associated injuries. It is interesting that at Very Busy times bodyboarders are the dominant activity, whilst on the Average days the surfboarder becomes dominant. Further research could be performed to discover why this phenomenon exists. For example, is CAS activity 'displacement' a common factor? Furthermore, South Fistral shows characteristics indicative of CAS congestion, a factor possibly aggravated by dominant activities that may eventuate in the displacement of alternative CAS activities. Therefore, South and North Fistral locations can be perceived as having numerous attributes that generate complex CAS problems.

### **5.2.3 Penwith Local Authority**

Penwith controls a number of beaches and although all beaches were supplied with both craft assessment sheets and weekly log sheets only a few of the locations completed the forms.

#### **5.2.3.1 Marazion.**

Craft Assessment Sheet = 12 weeks    Weekly Log Sheet = 4 weeks

The CAS activities recorded at this location are sailboating, powerboating, jet-skiing, water-skiing, sub-aqua diving, windsurfing, canoeing, swimming and occasional use by surfboards and bodyboards. Windsurfers feature as very heavy users of the location with records of over 50 in the water at the same time. Swimming participation fluctuated with weather conditions. Sunshine encouraged very high participation rates. For example, on 9.8.99 with overcast/rainy conditions 2 persons were recorded swimming, in contrast to



the recording of 550 persons swimming on 14.8.99 when it was sunny. Written observations by the lifeguards are concise:

- 10.7.99 "Conflict between Powerboat breaking speed limits and approaching the beach."
- 11.7.99 " Many incidents involving inflatables, Jet-skis and Ski-Boats."
- 22.7.99 "Surf ski-hire set up on beach, windsurf school also hiring out equipment," [and] ". . . problems again with speedboat down amongst bathers at Longrock."
- 14.8.99 "Windsurfers told to stay within flagged area. Bathers carefully watched due to intensive windsurfer activity" [and] "Jet skiers told not to launch from the beach due to heavy congestion with other water users."
- 20.8.99 "Ski-Boat told to keep clear from the beach."
- 13.9.99 "Major problems with Ski-Boats, having to use Rescue boat as a boomer to stop Ski-Boats approaching the beach."

Written observations also note verbal harassment from jet-skiers and their disregard of the provided zoned area. Also recorded are conflicts between jet-skiers, wind surfers and a relatively new CAS activity of powerkite-surfing. Completed weekly log sheets are few and contain very little information from which to generate further comparative analysis.

Conclusion: Marazion is a heavy multi-use CAS site; over 11 different activities have been recorded at the location. The written observations of lifeguards suggest that in situ management structures are not effective and conflicts between the participants of the activities are prolific. Data collection was between May–September and activities are recorded as continuous throughout, although aspects of the weather affected both swimming and wind powered craft participation numbers. The analysis of the data sheets supplied by the lifeguards suggests conflict between the independent CAS activities that take place at Marazion.

#### 5.2.3.2. Porthminster, St Ives

Craft Assessment Sheet = 13 weeks    Weekly Log Sheet = 13 weeks

CAS activities recorded at Porthminster indicate intense use by sailboats, powerboats, bodyboarders and swimmers with sporadic use by alternative activities. The numbers of sail/power driven craft regularly exceed or equal the number of swimmers in the water. Written observations by the lifeguards relating to craft incidents are not recorded. The weekly log sheet showing numeric data, focus on lost children and occasions of first aid. Information from the sheets indicates that the location is more popular for beach activity than water sports.

Conclusion: The site is multi-use with 8 different types of activities recorded by lifeguards at the location. The indications that the beach is actively busier than the water require further investigation. Corroboration with other sites shows that at certain times the water becomes very busy with swimmers (e.g. sunshine related). The dominant CAS activity is sailboats and powerboats which displace other CAS activities. It is difficult to provide a detailed analysis of the location due to the lack of information provided.

The data from the 1999 Sub-Section Two LA data collection provided a substantial amount of information to develop the Year 2000 survey. It exemplified the fact that in some multi-use locations some Lifeguards were becoming exasperated by the lack of knowledge and understanding by some CAS participants of the environment in which they were pursuing their activities. This increased the need for the study to explore further the understanding and knowledge of CAS participants of the structures and mechanisms policies that manage the CAS environment. The detailed observations supplied by Lifeguards from the sites assisted in the year 2000 sample site selection because information revealed the types of activity that occur at certain sites and that some

sites had a higher probability of having reached or exceeded their CAS related carrying capacity than others.

### **5.3 Results of Stage One: Sub Section Three (2000)**

The aim of the year 2000 fieldwork was to identify the compatibility levels for the coexistence of certain sports and the carrying capacity for these activities that can be attached to locations in the coastal environment. It was perceived that by determining these levels then this would act as an aid mechanism for effective water-space management for multi-use coastal aquatic sports and inform future coastal management and planning. The aim and four objectives were developed from the information generated from the literature review the pilot study 1998 and the LA data collection 1999. The first was to examine if there is a unique common character profile attached to the participants in CAS. The second was to explore the differences in the attitudes and perceptions of individual CAS participants to 'quality of experience' criteria. The third objective was to examine if there was a difference in the attitudes and perceptions of individual CAS participants to issues of coastal loading, risk and safety and the fourth was to explore the knowledge and understanding of CAS participants to issues relating to the policies and management programs that regulate CAS and to examine the variability between participants.

The approach of Bowers (1996) has been adopted for the presentation of the results whereon a variety of specific objectives associated with data analysis are explored in the first instance by the use of descriptive statistics. The results of the initial analysis of the data via descriptive statistics allowed for the management and the organisation of the complete data set and in turn improved the identification procedures for specific

characteristics. The main arguments derived from the descriptive results are then further developed with the support of statistical tests. The types of tests used for this are discussed in Section 4.9.2. Statistical tables are presented available in Appendix 4 of this thesis.

### 5.3.1 Sample Overview

A short overview of the logistics (when and where) associated with the year 2000-sample frame will provide the start point and the information core.

The year 2000 fieldwork took place at Newquay, Marazion-Penzance, St Agnes, Falmouth and Plymouth between the dates of 11<sup>th</sup> July 2000 and 31<sup>st</sup> October 2000. The rationale by which the sites were selected is explained in Section 4.8. Fifty-one visits took place at these locations. However, due to unforeseen circumstances, 20 of those visits provided no data. Table 5.1 shows both dates and locations of visits.

JULY	AUGUST	SEPTEMBER	OCTOBER
11 <sup>th</sup> Falmouth	1 <sup>st</sup> Plymouth	3 <sup>rd</sup> Falmouth	* 3 <sup>rd</sup> Plymouth
17 <sup>th</sup> Newquay	2 <sup>nd</sup> Newquay	4 <sup>th</sup> Falmouth	* 4 <sup>th</sup> Plymouth
19 <sup>th</sup> Newquay	4 <sup>th</sup> Newquay	7 <sup>th</sup> Plymouth	* 6 <sup>th</sup> St Agnes
20 <sup>th</sup> St Agnes	5 <sup>th</sup> St Agnes	* 8 <sup>th</sup> Plymouth	14 <sup>th</sup> Newquay
* 21 <sup>st</sup> St Agnes	6 <sup>th</sup> St Agnes	(*11 <sup>th</sup> Penzance)	* 15 <sup>th</sup> Newquay
22 <sup>nd</sup> Penzance	7 <sup>th</sup> Falmouth	(*12 <sup>th</sup> Penzance)	16 <sup>th</sup> Penzance
23 <sup>rd</sup> Penzance	* 8 <sup>th</sup> Falmouth	(*15 <sup>th</sup> Newquay)	* 17 <sup>th</sup> Penzance
* 26 <sup>th</sup> Plymouth	15 <sup>th</sup> St Agnes	(*16 <sup>th</sup> Newquay)	18 <sup>th</sup> St Agnes
27 <sup>th</sup> Plymouth	17 <sup>th</sup> St Agnes	* 26 <sup>th</sup> Plymouth	* 19 <sup>th</sup> St Agnes
29 <sup>th</sup> Falmouth	* 26 <sup>th</sup> Plymouth	* 27 <sup>th</sup> Plymouth	23 <sup>rd</sup> Newquay
30 <sup>th</sup> Falmouth	* 27 <sup>th</sup> Plymouth	28 <sup>th</sup> St Agnes	25 <sup>th</sup> Newquay
* 31 <sup>st</sup> Plymouth	29 <sup>th</sup> Newquay	29 <sup>th</sup> St Agnes	27 <sup>th</sup> Falmouth
		30 <sup>th</sup> Newquay	*28 <sup>th</sup> Falmouth
*Unsuccessful visits	(*) Fuel Crisis		29 <sup>th</sup> Falmouth
TABLE 5.1			30 <sup>th</sup> Newquay

Table 5.1      Dates and Locations of the Year 2000 Fieldwork

The fieldwork took 40-70 minutes per individual questionnaire and resulted in 291 various CAS participants being surveyed and 209 completed questionnaires being collected (i.e. 82 refusals) = 71% response rate. These data can be ordered in the following manner:

- Newquay: 80 respondents, 28 refusals
- Penzance: 37 respondents, 6 refusals
- Falmouth: 44 respondents, 19 refusals
- St Agnes: 35 respondents, 21 refusals
- Plymouth: 13 respondents, 8 refusals

Table 5:1 identifies dates when visits proved unsuccessful - in particular visits between 11. 9. 00 and 18. 9. 00 were influenced by the national fuel strike. The weather also had a major effect on the fieldwork. The months of September and October were particularly rainy and many days had gale force winds. Hence, CAS participants at marinas in Plymouth and Falmouth were extremely difficult to identify with many yacht/boat owners remaining inside their craft; bad weather also made oral communications difficult. Furthermore, bad weather also encouraged all types of CAS participants to leave immediately after their sports activities, to seek shelter, and consequently decline to take part in the survey.

The data collection secured 209 completed questionnaires from the participants of the different CAS identified in Chapter Three. Table 5.2 identifies the numbers of respondents from each individual CAS collected during the year 2000 survey.

SPORT	Frequency	SPORT	Frequency	SPORT	Frequency	TOTAL
Swimmer	18	Kite-surf	1	Jet-ski	9	
Bodyboard	23	Canoe	10	Powerboat	11	
Shortboard	27	Windsurf	32	Sub-aqua	12	
Longboard	25	Sailboat	28	Angler	13	209

Table 5.2 Distribution of CAS Type and Frequency of Completed Questionnaires by CAS Respondents.

Using the different power sources that drive the individual CAS activities (also described in Chapter 3) Figure 5.1 presents the questionnaire data condensed into four specific categories, Human, Wave, Wind and Fuel. This compression provides an effective nominal variable for statistical testing.

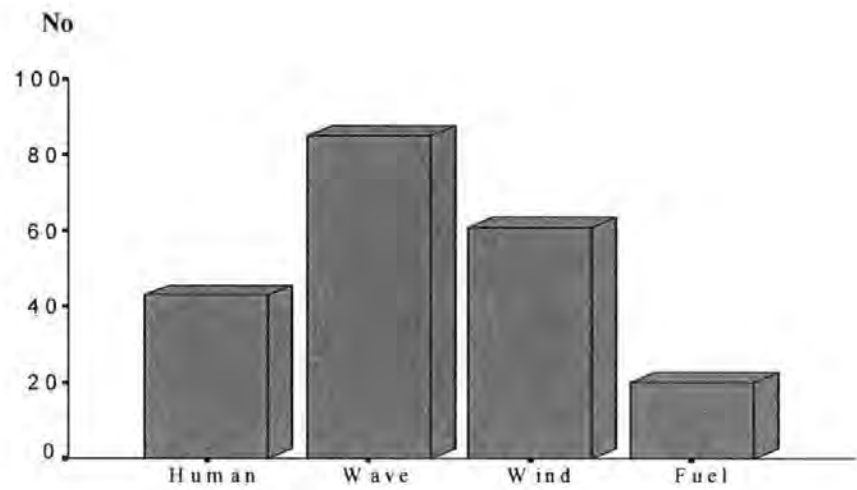


Figure 5.1 The Numbers of CAS Participant Response by Power Source

Having explained the logistics associated with the year 2000 data collection the following sections will begin to reveal details of the data analysis. When cause and effect relationships are revealed by the descriptive results these are explored and arguments substantiated with results from further statistical testing. The tables revealing the results of the statistical tests are catalogued in Appendix 4. The results are presented in this chapter by detailing the table number, the type of test and the probability level.

Section 4.4 identified four objectives for the year 2000 survey these were:

- To determine if there is a unique character profile attached to the participants in CAS and whether that profile differs for the independent activities
- To investigate if there is a difference in the attitudes and perceptions of individual CAS participants in relation to ‘quality of experience’

- To examine the differences in the attitude and perceptions of individual CAS participants to issues of coastal loading, risk and safety
- To accumulate information in relation to the variability of understanding by CAS participants of issues relating to policies and management programs that regulate CAS

Hence each of the following sections will examine the results of the year 2000 data using the objectives set out in Section 4.4 as the presentation methodology.

### 5.4 Results relating to Stage One: Sub Section Three - Objective One

#### 5.4.1 Respondent Profile

Age Range: Table 5.3 shows that the 33% of the sample population was between 26-35, whilst 28% were aged between 36 and 45. The youngest and oldest age groups were 22% and 17% respectively. This indicates that 26-35 year age groups are potentially more interested in taking part in an activity than other age groups. Hence CAS managers could develop strategies to encourage active participation for 26-35 year age groups.

Age	Frequency	Percent %
16 - 25	46	22.0
26 - 35	69	33.0
36 - 45	59	28.0
46+	35	17.0
Total	209	100.0

Table 5.3      Age Range of Sample

However although Table 5.3 shows that the 26-45 age groups are more likely to take part in CAS this assumption could very well have been be affected by many other variables such as the costs and the personal energy expenditure associated with the different types

of activity. Hence the next step was to examine the respondents' age range in relation to the type of CAS using the nominal variable 'powered' (see Figure 5.1) as the dependant variable.

The details of this examination are shown in Figure 5.2. This figure shows an interest from CAS respondents in wave powered activities peaking for the 16-25-age range with a subsequent steep decline across the age ranges. This work suggests that this may be connected to cost and accessibility. Chapter Two revealed that the equipment required to take part in wave powered activities is substantially lower than wind and fuel powered activities suggesting that overall the wave powered equipment costs are lower than their counterparts. Furthermore light versatile equipment can also increase the ease of accessibility to water's edge because the associated infrastructure requirements are minimised. Hence wave powered activities may contain desirability factors for younger age ranges. This point will require a specific research that focuses on wave powered activities.

In addition to the above the fact that wave powered CAS may be individually physically more demanding in comparison to alternative activities and this point may also require further exploration. Finally, Section 2.3.2 discussed the influence of culture on some CAS. Surfing in particular is identified as containing a strong subculture identity and this must also be considered an influence on the age range of participation. Factors relating to culture will be discussed in Section 5.5.



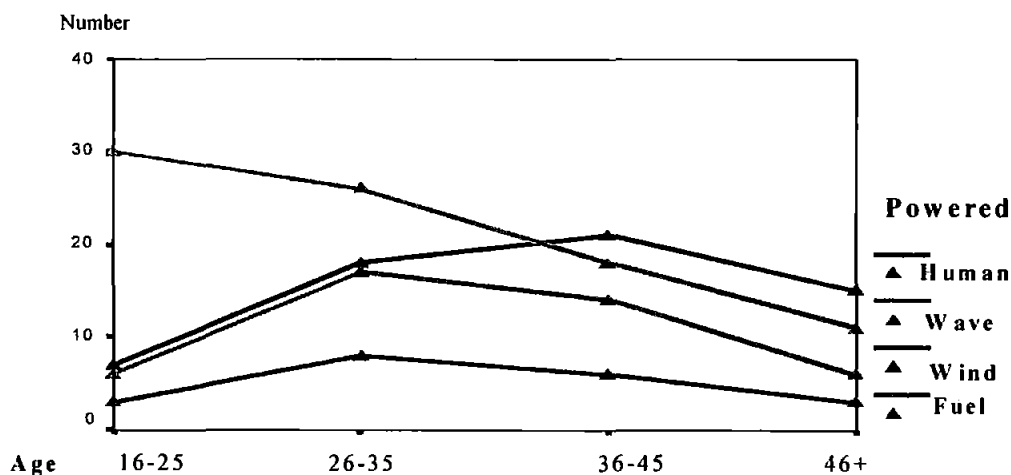


Figure 5.2 Age Range of Sample in Relation to Power Source

Human-powered activities peak at the age range of 26-35, drop slightly towards the 36-45-age range and decline steeply thereafter. Human powered activities include both swimming on top of the water and sub-aqua activities. Both types of human activity discussed here contain elements of risk that differ from their counterparts. Swimming on top of the water in the natural environment is low cost in relation to participation equipment and is highly versatile with regard to access. However the activity incorporates little equipment (floatation devices) in regard to personal safety, whilst sub-aqua is noted to be a high risk activity, requiring a substantial amount of equipment to take part and to some extent restricted access (requirement of boat infrastructures). These points may have affected the age ranges of the human powered age ranges. This may be substantiated by further exploration.

Wind-powered activities show a steady growth of interest in the 26-35 age group, a peak in the 36-45 age groups and a decline thereafter. Further statistical testing showed that there is a significant difference Table 5.4 (App. 4;  $t$  test.  $p = 0.001$ ) between the age ranges of wind powered and wave powered participants. This is important because

further examinations showed no significant differences between the participant age groups of the alternative power sources. Hence it will be important that further research examines the differences between the CAS wind and wave power sources to determine the reason why age is a significant driver for the uptake of participation.

The costs and accessibility of the associated participation equipment may also have affected the wind powered age range. For instance sailing was noted in Chapter Two to have been the sport of the gentry and although technology has reduced overall costs the activity demands that extras such as maintenance procedures and infrastructure costs are also considered.

Fuel powered activities show interest on a very gradual scale across the age range, peaking slightly around the 26-35 age groups.

Further statistical testing revealed that the location of interview also has a bearing on the age range of the sample. Table 5.5 shows that there is a significant difference between the observed and expected frequencies between the age range of the respondents and the location of the fieldwork. CAS Participants from Newquay were significantly (App. 4; Chi-Square ( $\chi^2$ )  $p = 0.01$ ) more likely to be from the 16-35 age group than participants from Falmouth who were more likely to be aged over 46.

**Respondent Gender:** Section 2.2 discussed a Government commitment to sport and the way that the Sport England 'Sport for All' incentive was designed to encourage all members of society to participate in sport. Thus, one of the incentive's aims was to specifically encourage members of ethnic minorities and women to take up some type of sport. As Table 5.6 illustrates, the samples contain a higher proportion of males (84%)

than females (16%). Statistical testing shown in Table 5.7 confirmed that there was a significant association (Chi-Square ( $\chi^2$ )  $p = 0.032$ ) between gender and preference for the different types of CAS. This will be important in the development of CAS because this result suggests that male domination in CAS activity may be a factor affecting the take up of CAS activities by the female sector. However this assumption will require further research to confirm.

**Visitor – Resident:** Section 2.8 discussed how CAS is intertwined with the tourism industry; in particular Section 2.9.2 discussed how CAS activity type holidays are increasing. Furthermore, Section 2.9.3 illustrated how the tourism industry in Cornwall has increased to such an extent that it now provides for significant economic benefits for the region. Table 5.8 shows that 59% of the sample were visitors to the sites and 41% were residents. This is very important because it supports the discussion in Section 2.8 and emphasises that CAS is an important attractor for tourism. Furthermore, the number of visitors recorded by the survey as taking part in CAS also indicates that visitors should be targeted as a special group by coastal managers. This point is supported by the fact that further statistical testing (Table 5.9) showed that there was a significant difference (App. 4; Chi-Square ( $\chi^2$ )  $p=0.01$ ) between the observed and expected frequency of visitors and residents and levels of ability. Visitors were more likely to be of a beginner or an intermediate level than residents and because of this visitors will require special attention with regard to personal safety.

**Car Ownership:** The mean distance travelled to a CAS location by a respondent was 25miles and Table 5.10 shows that 83% of the sample owned a car. Therefore, coastal managers may use this data to target the distribution of CAS participant information and create wider geographical resource networks. In addition, on-site car parking may be

used as a means of crowd management. For instance beach managers may capitalise on the knowledge that the majority of CAS participants have personal transport and are prepared to drive 25 miles to partake in their activity. Therefore, clear *in situ* information posts may provide geographical emphasis on similar CAS sites within a 25-mile radius potentially redirecting some CAS participants to less congested sites during high peaks of activity. Information posts may be streamlined further by introducing higher technology (such as video recorder images showing real time information relating to alternative sites) in conjunction with more widely available CAS information networks.

#### 5.4.2 Perceptions of CAS Respondents to Ability (Questions 1 – 5)

Table 5.11 shows that 55% of the sample perceived that they were experienced in their CAS. Thirty percent perceived that they were at an intermediate level and 16% perceived themselves to be beginners. The fact that CAS participants were able to self assess their ability suggests that this information could be used by coastal managers for ability determined purposes, for instance segregation.

<i>Ability</i>	Frequency	Valid %
Beginner	33	16
Intermediate	62	30
Experienced	114	55
Total	209	100.0

Table 5.11 Respondent Perception of Self – Ability

Figure 5.3 shows that there are proportionally more respondents taking part in wave powered CAS that perceived themselves as beginners and discussion earlier noted that visitors were significantly more likely to a beginner or intermediate than residents. This may also be linked to the age range of CAS participants because, as discussed in Section

5.3.3, wave activities are particularly popular with the 16-24 age range. Further statistical tests illustrated in Table 5.12 show that there is a significant association (App. 4; Chi-Square ( $\chi^2$ )  $p = 0.001$ ) between the age range and perceived ability of CAS participants in that the 16-35 age group who were more likely to be a beginner or an intermediate than the 36-46 age groups. Therefore, the 16-35 age range (subject to further research and regard to the probable linkages between age range and wave powered activities) will require specific educational and awareness targeting by coastal managers. Additionally the location is also important to this enquiry because it was shown earlier that Newquay has significantly more 16-35 aged CAS participants than Falmouth or Plymouth; linking this data with the data discussed here it is reasonable to suggest that Newquay has a higher proportion of CAS beginners than alternative locations and this point will be important to the coastal managers of this site.

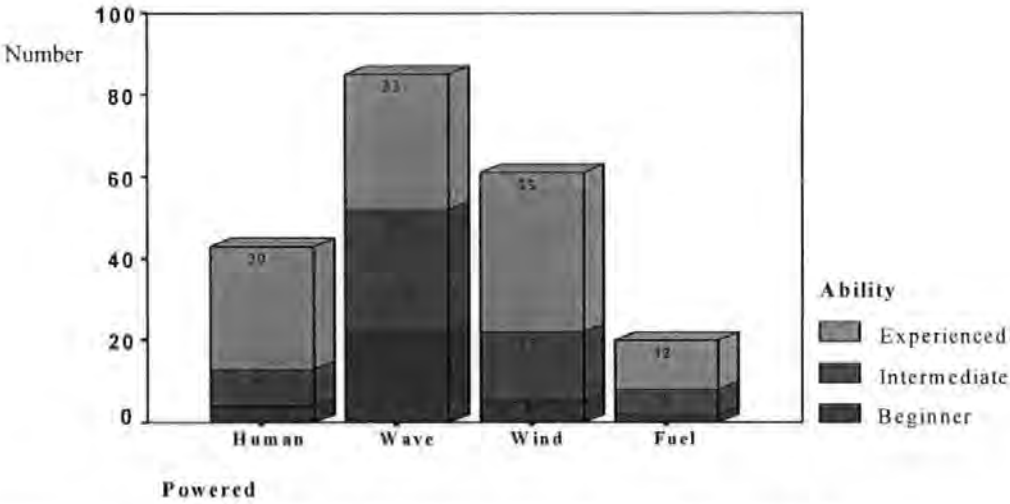


Figure 5.3 Respondents' Self-Ability Perception in Relation to Power Source

A perception of self ability can be related to the amount of formal instruction received by a CAS participant. It is interesting therefore that the number of CAS participants with no instruction (Figure 5.4) is shown to exceed the number of participants that perceive themselves as a beginner (Figure 5.3).

This implies that some CAS participants consider themselves to be at the intermediate or even experienced level without receiving any formal instruction. This will require further research because it is possible that in some cases CAS participant self-ability perceptions may be based on information gained from external informal sources and/or their longevity in the activity. This is important because informal information sources are unstructured and therefore may not encourage effective sport practices to develop. Hence, emphasis on 'self-regulatory' incentives may perpetuate these poor information sources and prove unsustainable in the long term.

Figure 5.4 results from Question Three which asked respondents to indicate the length of time that they had spent on CAS training course/s. The mean instruction period for the whole sample was 86.5 hours, equating to approximately 3 weeks. The mean time for the respondents' participation in their particular CAS activities was 16 years. This is also important because it shows that CAS may be considered a 'life' sport and this may have a link to the sport for all incentives stimulated by the Sports Councils. This data set variable was condensed into sub-sections (Figure 5.4) 1-2 days, 2-3 weeks and so on. This has allowed for a more detailed examination of the instruction periods associated with the sample. The mean time period that a participant engages in CAS is similar for all the CAS at 83 times per year which is around 1.5 times per week. This emphasises that CAS is an important sport motivator and can act as a catalyst for the take up of sport.

Figure 5.4 shows that participants in the CAS wind and human power categories have engaged in longer periods of instruction than their wave and fuel counterparts. The high level of human activity instruction may have been stimulated by two reasons. First Section 2.5.9 highlighted how swimming instruction is part of the National Curriculum. On a national level, therefore, it is more likely that both locals at, and visitors, to coastal

locations have taken swimming instruction. This indicates that the government 'national' swimming initiative has provided a catalyst that is perpetuating the 'Sport for All' initiative because a knowledge of swimming is potentially being used as a transferable trigger for CAS participant water safety awareness. In the case of wind powered activities it is clear that the RYA is a well established NGB and this may reflect the relatively high level of technical ability confirmed here.

The wave and fuel related activities show a higher proportion of respondents with no instruction. This is important because Section 5.2.3.1 clearly showed that during 1999 lifeguards at the Marazion site recorded numerous incidents relating to fuel powered craft. Participants disregarded zone advice and endangered swimmers and other users. This may be linked to participants' lack of formal instruction, in that they did not know 'what' or 'where' a zone was.

Furthermore, instruction periods for wave powered participants may be low because these types of activity require very little equipment, and therefore lend themselves to casual participation. Hence, further research is required with relation to the periods of instruction taken by participants of CAS. For instance it was discussed earlier how visitors and the 16-36 year age groups will require special attention by coastal managers and because Figure 5.4 shows that 3-5 days and 2-4 weeks are the most popular periods for which participants of wave powered craft respondents have elected to receive instructions this suggests that short intensive courses may be more favourable for these types of participant. Wind powered CAS show that periods of instruction are fairly evenly spread throughout the five time scales, whereas fuel related activities show a higher level of instruction at 1-2 months.

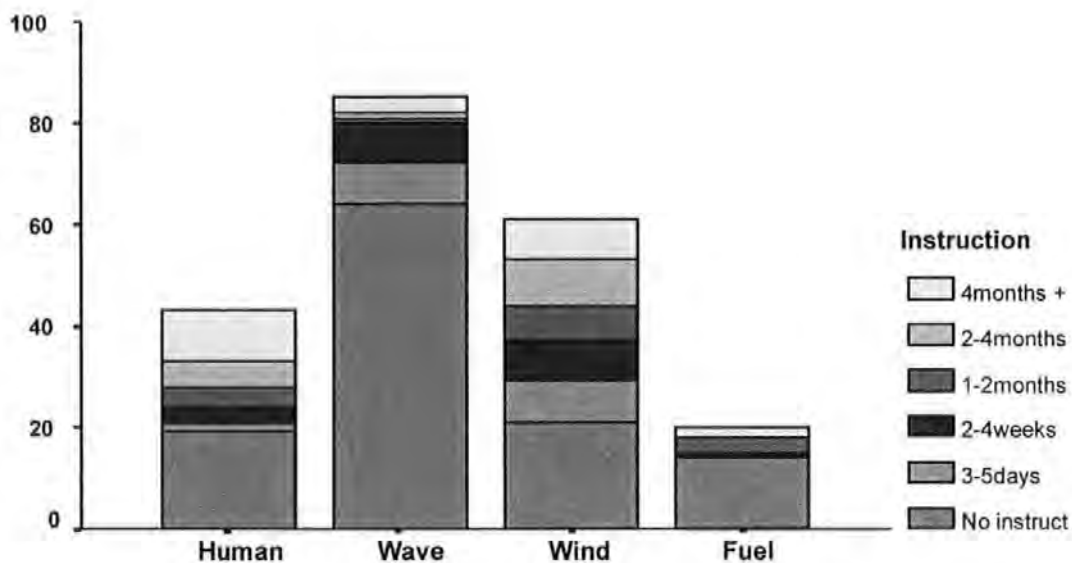


Figure 5.4 Periods of Instruction Received by CAS Respondents by Power Category

### 5.4.3 Summary of Participant Profile

The age range is a key variable in the assessment of the sample CAS participant profile. For instance, CAS is shown to be more popular with the 26-35 age groups. However, the type of activity is shown to be location dependant and both of these points are shown to have an affect on the age groupings. Falmouth and Plymouth attract the 36-46+ age groups and these locations are shown to be geared up for wind powered activities. In contrast Newquay attracts the 16-35 age groups and is notably associated with wave powered activities. This factor is important because the younger age groupings are shown to be significantly less likely to have partaken in any formal instruction and they are more likely to assess themselves as a beginner or of an intermediate ability. Therefore it is more likely that Newquay will generate more issues relating to safety than alternative locations. Hence coastal managers from locations that serve for wave powered activities will need to prioritise safety policies and link these issues to age groupings. Further emphasis for the need to ameliorate the negative affects caused by the different scales of 'ability' is the evidence that visitors (a group of economic importance) to the South West are also significantly more likely to be a beginner than the residents of the area.



The profile also showed that female participation in CAS was low and that the majority of CAS participants owned a vehicle. Further research was suggested with relation to the individual sports and also further examinations could provide the answer to why CAS are predominately male dominated and thus how female CAS participation could be increased. Alternatively, why the age-range of participants differ between the different activities and the reasons why participants assess themselves as being of an intermediate or experienced ability yet have received no formal instruction. The next section will examine what constitutes as 'quality' within the CAS experience.

## **5.5 Results Relating to Stage One: Sub Section Three - Objective Two**

Section 5.5 will concentrate on the results of the data concerning the attitudes and perceptions of individual CAS participants to 'quality of experience' criteria.

### **5.5.1 Description of Quality from the Perspective of the CAS Participant (Questions 7, 8 & 13)**

One objective of this study was to explore the motivators that stimulate CAS participation. Presented on a Likert scale, Question Seven asked respondents to choose between a numbers of pre-determined sport-related motivations. Table 5.13 shows that 75% of the sample agreed that 'escapism' was a quality that they associated with their CAS; 5% were undecided and 21% disagreed with the statement. Further statistical testing revealed (Table 5.14) that there is a significant difference between the observed and expected frequency of local and visitor perceptions of 'escapism' contributing to the quality of a CAS experience. Locally based CAS participants are significantly (App. 4; Chi-Square ( $\chi^2$ )  $p = 0.05$ ) less likely to perceive escapism as a quality of CAS experience.

This is important because it suggests that perceptions of escapism feature highly as a desirable factor for visitors coming to the South West and therefore further independent research may be able to explore this factor further and identify how the perception may be used to improve the quality of visitor experiences and increase CAS participation and visitor numbers. The location, craft-type, participant age or ability showed no significant relationships with regard to escapism which suggests that perceptions are probably similar within these groups.

Table 5.15 shows that 81% of the sample agreed that sharing the time with friends or 'others' was a quality that they received from CAS and 15% disagreed with the statement. Section 2.2 highlighted the importance of sport in its ability to act as catalyst for social cohesion and Table 5.15 shows that CAS adheres to this notion. Similarly to the respondents perceptions of escapism Table 5.16 showed that there was a significant difference between the observed and expected frequency of local and visitor perceptions of 'others' as a quality of the CAS experience. Local participants are significantly (App. 4; Chi-Square ( $\chi^2$ )  $p = 0.03$ ) less likely to perceive being with others to be a quality of CAS experience. This is also interesting because it suggests that local CAS participants have different ideals to visitors in that they may not perceive CAS in the same way and thus may not be influenced by the same means. Therefore coastal managers will need to target visitors as a special group.

Section 2.3 indicated that competitive motivators derive from external sources and generally are unsustainable. Table 5.17 showed that 54% of the sample agreed that 'competition' was not a quality that they sought from CAS, 12% were undecided but 36% felt that competition was a CAS motivator. This will require independent research because it suggests that motivational differences may create quite different participant

perspectives and these could lead to a conflict of interest and cause for unsustainable consequences. This is important because it may indicate that 'competition' may not necessarily be formally organised. For instance, competition between CAS participants may be taking place even though some of the participants may be taking part involuntarily. i.e. there may be participants both mentally and physically competing with others in the water whilst the other participants are unaware that they are taking part. Further statistical testing showed that there was no significant relationships between the respondents perceptions of competition as a quality factor of CAS and the location of interview, age of the participant or their levels of ability. Hence this factor will require an independent research to ascertain how 'competition' fits in to the overall CAS experience.

Where the Sport for All initiative encourages a greater take up of sport, it is perceived that such activities will increase the health of the nation. Table 5.18 shows that 84% of the sample agreed that 'exercise' was a quality that they received from CAS, 4% were undecided and 12% disagreed with the statement. It is important, therefore, for coastal managers to be aware that, in the main, CAS participants are conscious of the health benefits associated with sport participation and to ensure that management decisions take account of this participant association between CAS participation and 'health'. Further statistical testing revealed no significance between the location of interview, age range, type of craft, or level of ability and the respondents' perceptions of exercise as a quality of the CAS experience.

Table 5.19 shows that 76% of the sample agreed that 'culture' was a quality that they received from CAS, 6% were undecided and 18% disagreed with the statement. This emphasises how associated cultures and sub-cultures impact on CAS participants. Section 2.3.2 suggested that cultures can support unique patterns of behaviour and that

these are perpetuated through forms of expression and language. Further exploration showed that there was a significant difference between the observed and expected frequencies of respondents' perceptions of culture as a quality of their CAS experience and the three levels of ability. Table 5.20 showed that beginners and intermediate respondents were significantly (App. 4; Chi-Square ( $\chi^2$ )  $p = 0.04$ ) more likely to perceive culture as a quality of their CAS experience.

This suggests that the cultures that are attached to CAS can act as a catalyst for encouraging participation. This leads to an assumption that by developing the individual CAS cultures then participation in those CAS is likely to increase. Interestingly the location, type of power source, the age group of the participant and if they were visitor or resident had no significance on the perceptions of culture as a quality of CAS experience. Therefore coastal managers, by recognising and responding to CAS cultures and their significant linkages to the beginner and intermediate levels of ability, may increase the effectiveness of management initiatives.

<i>Culture</i>	Frequency	Valid Percent
Strongly Agree	31	15
Agree	128	61
Undecided	13	6
Disagree	31	15
Strongly Disagree	6	3

Table 5.19      Respondent Perceptions of Culture as a Desired Quality of their CAS

Table 5.21 shows that 94% of the sample agreed (41% strongly agreed) that the motivation to take part in CAS was ‘personal’ and that this was a quality that they received from CAS. Two percent were undecided and 3% disagreed with the statement. This indicates that the majority of CAS participants are intrinsically motivated to

participate in CAS. Section 2.2 noted that because intrinsic motivations come from within, participants stimulated by these are more likely to retain a long-term interest in an activity over a long period of time.

Table 5.22 shows the results from Question Eight. This question contained eight sub-sections and requested the respondent to identify a measure on a six-point scale that would fit their perceptions of 'importance factors' that would/would not affect them when they participated in their CAS. To improve the management of this data set a reduction procedure was employed and this reduced the six-point scale to two. Amalgamating the scores of None, Very-Low, and Low into the singular score of Low and the scores of Medium, High and Very-High into the singular score of High achieved this.

Table 5.22 shows that weather and sea conditions (94%) were perceived to be the most important influence factor for participants in CAS, and other people's ability (43%) was perceived as being the least important. Over 90% of the sample indicated that the visual environment, personal equipment and the overcrowding of a site were also very important factors affecting their CAS participation.

Table 5.14 also shows that over four fifths of the sample indicated that friends, other people's attitudes and crafts were very important influential factors affecting their CAS participation. This will be further analysed during the discussion of perception of risk.

Importance	Low	%	High	%
Other People's Ability	91	43.5	118	56.5
Other People's Attitude	33	15.8	176	84.2
Weather & Sea Conditions	12	5.7	197	94.3
Other People's Craft	33	15.8	176	84.2
Overcrowding of Site	18	8.6	191	91.4
Visual Environment	21	10.0	188	90.5
Friends	34	16.3	175	83.7
Personal Equipment	16	7.7	193	92.3

Table 5.22 Importance Factors Affecting CAS Participation

The interview location was significant with regard to the CAS participants' perceptions of the importance of 'other people's attitude' and 'other people's ability' when they interacted with others in the CAS landscape. Table 5.23 (App. 4; Chi-Square ( $\chi^2$ )  $p = 0.001$ ) and Table 5.24 (App. 4; Chi-Square ( $\chi^2$ )  $p = 0.004$ ) show that the participants interviewed at Falmouth had statistically significantly higher scores for 'importance of attitude', and 'importance of other people's ability' than those participants interviewed at Marazion. These results suggest that Falmouth incidents (inclusive of marinas) may be ability related and this further indicates that at some locations the need for separation zones based on ability is greater than at others. Falmouth therefore may currently be at a greater risk of saturation and therefore in greater need of a management system. Further statistical tests (App. 4; Table 5.25) show that there is a significant difference between the observed and expected frequency of the three ability levels of CAS participants with regard to the importance of other craft types to their perceptions of CAS quality. CAS intermediate participants are significantly (App. 4; Chi-Square ( $\chi^2$ )  $p = 0.06$ ) more likely to note interactions with other people's craft as impacting upon their quality of experience.

This point is important and will require further and independent research because Table 5.25 shows that CAS intermediate level participants are more aware of others in the CAS

environment. Therefore an assumption can be made that CAS participants of intermediate ability are likely to be more receptive to CAS information. This implies that targeting Sport Codes of Practice (SCP) information at intermediate CAS participants may be an effective management technique. However Table 5.25 may also suggest that the beginner who lacks knowledge may be unaware of 'interactive issues' concerns with safety, whilst in contrast the experienced participant may have a mature knowledge to the extent that 'other people's craft' are no longer an issue.

Question 13 asked whether the respondent had experienced a reduction in the quality of their experience when they shared water space with other participants of CAS. The results show that 51% of respondents did not believe that their sporting experience was reduced when they shared the same water space, 48% of respondents believed that their sporting experience was reduced and a further 2% of respondents did not know.

If CAS participants perceive a reduction in their quality of sport time whilst sharing water space there is a possibility that it is partly because they perceive a risk of collision which implies that they may have experienced a saturated location. This is supported by data in Table 5.16, which shows that being with friends/others in the water is a desirable quality of CAS. However, Section 3.2 shows that conflicts can arise because when people interact in the same situation they can perceive the situation very differently.

Figure 5.5 displays the spread of answers in relation to the power categories. This shows that participants of wind powered CAS have a lower reduction of sporting experience associated with sharing water space than those who take part in human, wave or fuel related CAS activities. This may imply that wind powered participants have had the least

interaction with congested water space and, hence, there is a further suggestion that ‘congestion’ may currently be geographically limited to the coastal fringe.

The next section (5.6) will begin to examine the participants’ perceptions of risk and see if they are linked to the participants’ judgement on the quality of experience.

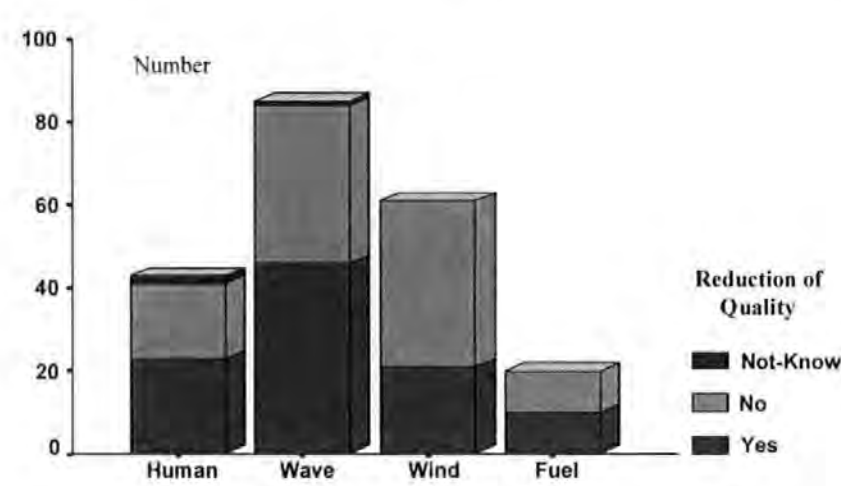


Figure 5.5 Respondent Perceived Reduction of Sporting Experience Associated with Sharing Water Space in Terms of the Power Category

**5.6 Results relating to Stage One: Sub Section Three - Objective Three**

Objective Three of this study was to examine the differences in the attitudes and perceptions of individual CAS participants to issues of coastal loading, risk and safety. However, because some of the results of this examination contribute directly to the aim of this study (which was to identify the compatibility levels for the coexistence of certain sports and the carrying capacity for these activities that can be attached to locations in the coastal environment) it has been decided that these results should ‘stand alone’ and be discussed in a separate chapter (Chapter Six). Hence, Section 5.6 will focus on some of the other issues that affect the attitudes and perceptions of CAS.



5.6.1 Risk from the Perspective of the CAS Participant

(Question 9 – 17)

An objective of this study was to explore CAS participants’ perceptions of risk and occasions of incidents relating to aquatic collision and hostility.

This section of the questionnaire contained five sub-sections and requested the respondent to measure on a six-point scale their perception of certain ‘risk factors’ that would/would not affect them when they participate in CAS. To improve the management of the data the same reduction procedure carried out for Question Eight was used to reduce the six-point scale to two.

Risk Factor	Low	%	High	%
Other People's Ability	35	16.7	174	83.3
Other People's Attitude	32	15.3	177	84.7
Weather & Sea Conditions	24	11.5	185	88.5
Other Types of Craft	46	22	163	78
Overcrowding of Site	21	10	188	90

Table 5.26 Respondent Perceptions of Risk Factors

Table 5.26 may be compared with Table 5.22. This is because Table 5.22 invited respondents to identify the level of importance of factors that may affect the participatory quality of CAS. By comparison Table 5.26 invited respondents to identify the level of risk associated with the same categories.

Section 2.2 emphasised that risk and ‘wilderness’ attributes associated with sports taking place in the natural environment are desirable qualities. It is interesting therefore, that Table 5.22 shows that 94% of respondents found ‘weather and sea conditions’ (which are wilderness qualities) as having an important ‘desirable quality’ affect on the activity.

However, Table 5.26 shows that 89% of the CAS participants also identified these 'wilderness' related qualities (weather and sea conditions) as having high risk and this supports the observations in Section 2.2. This level of 'desirable risk' may also provide a means of measuring alternative risks. For instance, Table 5.26 shows that the risks associated with CAS interaction are noted by some CAS participants to be akin to the desirable risk associated with the natural environment.

Over 80% of the respondents perceived other people's attitude and ability to be associated with high risk. However, Table 5.22 shows that although only 56% of the respondents perceived 'ability' as having an important affect on CAS participation it also shows that over 94% perceived 'other people's attitude' as an important factor. This indicates that other people's attitude is considered both an issue and a high risk by CAS participants.

The CAS location proved to be a determining factor for issues relating to participant perceptions risk. Table 5.27 shows that participants from the Newquay location perceived a significantly higher risk with issues relating to ability (Mann-Whitney U test  $p = .04$ ), attitude (Mann-Whitney U test  $p = .04$ ), and crowding (Mann-Whitney U test  $p = .006$ ) than CAS participants from Marazion. This is interesting because it is mainly wave powered activities that take place at the Newquay location and Figure 5.4 shows that the participants of wave powered activities have received little or no instruction and are most likely to be of the 16-26 age groups. Hence, the wave-powered participant profile may influence participant perception of risk and this suggests that locations where wave-powered activities take place may require a specific management system. Furthermore the type of activity also affected the scores relating to perception of risk. Table 5.28 shows that human CAS participants perceived a higher risk with issues relating to ability (Mann-Whitney U test  $p = .006$ ), attitude (App. 4; Mann-Whitney U test

$p = .02$ ), and crowding (App. 4; Mann-Whitney U test  $p = .03$ ) than wind CAS participants. Additionally Table 5.29 shows that fuel CAS participants significantly perceived a higher risk in relation to ability (App. 4; Mann-Whitney U test  $p = .003$ ), attitude (App. 4; Mann-Whitney U test  $p = .005$ ), and crowding (App. 4; Mann-Whitney U test  $p = .004$ ) than wind CAS participants. This suggests that participants of human and fuel powered activities have been exposed to incidences associated with these issues. The term 'attitude' is important to this study because the presence of an 'undesirable attitude' can have negative consequences such as confliction.

Attitude has links to aggression, hostility and resource legitimising. It will be critical, therefore, for coastal managers to reduce these types of undesirable risk because they are a cause for conflict and will encourage the development of unsustainable practices. Table 5.26 shows that 90% of respondents considered that the 'overcrowding of a site' contained the highest risk factor. This indicates that these participants may have already experienced overcrowded sites, although the discussions in 5.4.3 revealed that the crowding was perceived to be significantly more risky in some locations than others and for specific activity.

Awareness of high risk factors could be ascribed to incidents of personal collision and/or knowledge of CAS collisions. Therefore Questions Ten through to Thirteen explored this. Fifty-one percent of the respondents stated that whilst participating in their CAS they had been involved in a collision which was caused by the movements of another person/craft, 49% of the respondents had not been involved in this type of collision. Forty-two percent of the sample stated that they had been the accidental cause of an aquatic collision that had involved another person or craft and 57% stated that they had not collided with another person or craft. One percent of the sample was unaware if they

had been involved in a collision. Thirty two percent of respondents had incurred financial consequences due to collision; however, 68% of the sample had not received any damage to equipment or sustained any injury due to an aquatic collision.

Hence, there is a suggestion that over one half of the respondents have been involved in some type of collision with a third of those having been involved in collisions incurring financial consequences. These statistics are relatively high considering ocean space and the fact that many of the incidents are probably not logged on official registers such as the Maritime Coastguard Agency. Therefore there are implications for the official data management instrument for cataloguing incidences and because the register of 'collisions' may be employed as a tool for the assessment of saturation levels it is important to be aware that the official register may underestimate the true circumstance.

Figure 5.7 shows that respondents that take part in wave powered CAS have more accidental collisions (been responsible for the collision) with other persons or craft, than those participants that take part in human, wind or fuel powered CAS. The participants in fuel-powered CAS reported no accidental collisions with other persons or craft. Both Figure 5.6 and 5.7 emphasise that CAS participants with wave powered craft are more likely to be involved in aquatic collisions. These observations are supported by further statistical testing. Table 5.30 shows that there was a significant association between the type of powered CAS and incidents of collision. Wave powered participants are more likely to be involved in a collision than human wind or fuel, and fuel powered CAS participants were least likely to be involved in a collision (App. 4; Chi-Square ( $\chi^2$ )  $p = 0.01$ ). This may be linked to the wave powered participant profile in that wave craft participants are likely to have had little or no instruction. This highlights the fact that wave powered activities require specific managerial attention.

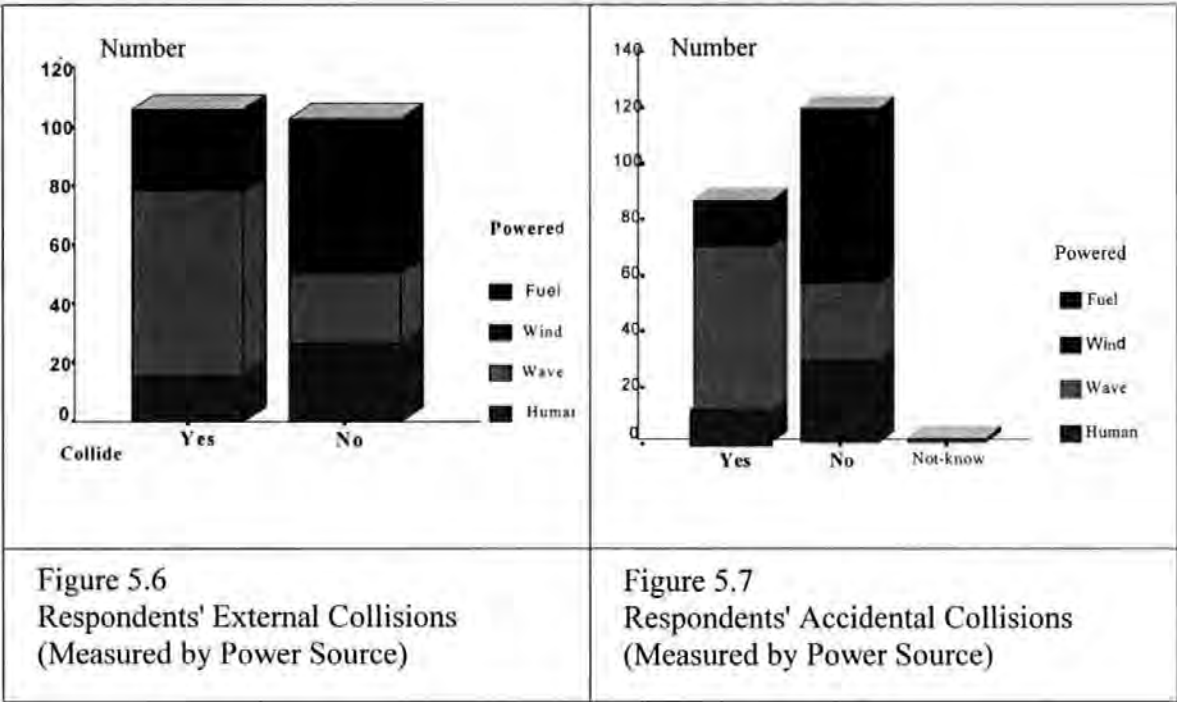


Figure 5.6 and Table 5.30 also show that respondents who participate in wave powered CAS have had more persons or craft colliding with them than those that take part in the human, wind or fuel powered CAS. This indicates that some wave powered locations have reached or exceeded saturation levels. Those respondents that take part in fuel powered CAS activities have encountered very few collisions. This may be linked to the fact that fuel powered craft have the ability to manoeuvre quickly in larger expanses of water; both these factors may lead to a low rate of collision.

Table 5.31 shows that there was a significant association between the craft power type and CAS participants that have caused for incidents of collision. Wave powered participants are more likely to have caused a collision than human, wind or fuel powered participants. Fuel powered CAS participants were least likely to have caused a collision (App. 4; Chi-Square ( $\chi^2$ )  $p = 0.01$ ). This clearly suggests that locations where wave powered activities take place require special management planning to ensure the sustainable development of wave powered resources. This is because if wave powered

participants are noting that they are the cause of collisions then this implies that they may also be aware of available waterspace.

Table 5.26 shows that CAS participants perceive risk as being associated with other people's attitude, ability, craft, and also with overcrowding, which implies that saturation is a common issue in the CAS landscape. The fact that so many CAS participants have been involved in collisions and recognise that they have been the cause of collisions emphasises the seriousness and consequences of congested waterspace. Therefore, it will be vital for the achievement of sustainability that coastal managers have an understanding of the compatibility ideals (discussed in Chapter Six) of the CAS environment.

Table 5.32 shows that 81% of the sample believed that they are more at risk when they share the same water space with other CAS participants. This suggests that a heightened perception of undesirable risk is a cause for the reduction in the perceived personal qualities that participants receive from CAS, as shown in Figure 5.5. Furthermore, because a large percentage of the sample considers that an increased risk is associated with interaction, it supports the suggestion that many CAS participants have experienced this type of risk. However, because Table 5.16, in contrast to Table 5.32, shows that 'others' in the water is a desirable quality for CAS participation it indicates that CAS participants can fine-tune their assessment of the risk which emanates from interactions with others. This further implies that these same participants must have a grass root understanding of CAS or even natural hazard perception ability and from this can assess how much space they require for their own personal safety. Hence, results obtained from questions relating to optimum participation numbers at a given location are likely to provide coastal managers with robust information on which to base decisions.

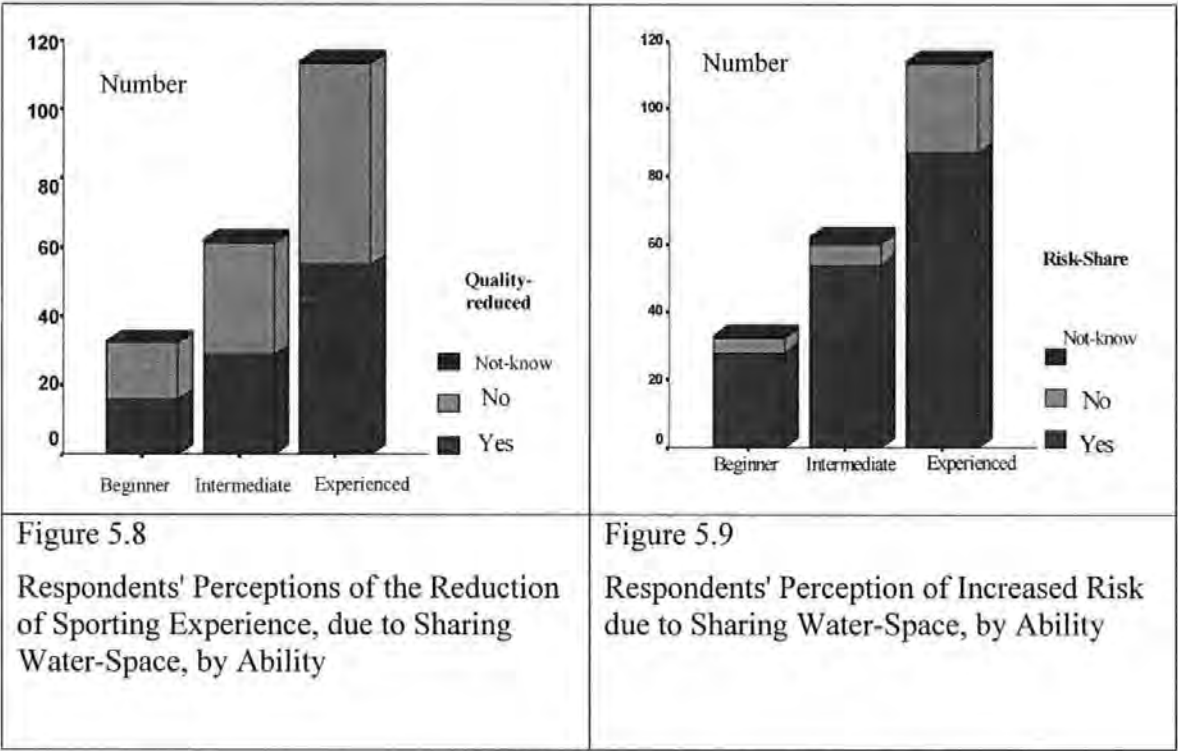
Taking this examination one step further, Figure 5.8 shows that perceptions of the reduction of sporting experience caused by the sharing of water space (discussed in Section 5.4.2) with other participants of CAS are evenly spread across the self-perceived ability levels.

Figure 5.9 represents the opinions of respondents of different self-perceived ability levels in relation to increased risk when sharing water space with other CAS. This shows that the majority of respondents perceive themselves to be at a higher risk when sharing water-space and that this is evenly dispersed across the ability levels. In contrast, Figure 5.8 shows that the presence of others in the same water space does not affect the quality of sporting experience of the majority of CAS participants.

Of particular interest to coastal managers are the results from Table 5.33, which show that the perceived risk scores of female CAS participants associated with their perception of risk when they share waterspace was significantly higher than male participants (App. 4; Chi-Square ( $\chi^2$ )  $p = 0.03$ ). This difference in perception of risk when sharing waterspace may provide a reason as to why females are not equally represented in CAS populations. This information may assist coastal managers in the preparation of their planning protocols.

By comparing the results relating to CAS participant perceptions of quality and risk the heightened perception of risk can be assumed to be an undesirable by-product associated with 'sharing'. This suggests that a relationship exists between 'quality and quantity' in that, as the number of CAS participants at a location increases, so does the CAS participants' perception of risk. This in turn will decrease CAS participant perception of experience quality.

Table 5.34 shows that a statistically significant (App. 4; Chi-Square ( $\chi^2$ )  $p = 0.001$ ) relationship is found to exist between perceptions of a heightened exposure to risk and a reduction in the ‘quality of experience’ when a CAS activity environment is shared, i.e. participants who perceive that there is a heightened exposure to risk associated with sharing water space are more likely to perceive a reduction in the quality of experience. This illustrates an important limitation of the carrying capacity attached to the CAS environment and the unsustainable consequences that result if this capacity is exceeded.



Sections 3.1-3.4 discussed conflict of interest. Section 3.3 specifically examined aggression and hostility. Question Fifteen inquired if respondents to the survey had encountered any form of hostility. Table 5.35 shows that 53% of the sample encountered verbal hostility, 42% encountered hostility in the form of gestures and 10% encountered physical hostility.



The presence of hostility can be used as a sustainability indicator for CAS, and Section 3.4 suggests how resource saturation can be measured by the occurrence of hostility. It is evident from Table 5.35 that over 50% of the sample had been in a CAS site that had reached or exceeded saturation point.

Tables' 5.36-38 shows the results of an examination of the hostility related variables named verbal, gesticular and physical. Table 5.36 (App. 4; Chi-Square ( $\chi^2$ )  $p = 0.001$ ), 5.37 (App. 4; Chi-Square ( $\chi^2$ )  $p = 0.001$ ) and 5.38 (App. 4; Chi-Square ( $\chi^2$ )  $p = 0.023$ ) show that there are statistically significant relationships between the self perceived ability of the CAS participant and their experience of level 1 (verbal), level 2 (gesticular) and level 3 (physical) hostility. The results shown in Tables 5.36-38 indicate that beginners have not encountered level 3 hostility but do encounter levels 1 and 2. Intermediate participants have encountered all levels of hostility at some time but the results show that the experienced CAS participants are most likely to encounter all types of hostility. This suggests that either saturation is regularly occurring at sites frequented by experienced participants and/or it may indicate that it is the experienced participants who have a lower tolerance of participants of a lesser ability, or indeed of each other. This suggests that coastal managers might find it useful to treat experienced CAS participants as a special group when management programmes are being developed.

Figure 5.10 takes this examination a little further and shows that level 1 hostility is possibly more common amongst wave powered craft. This may be because participant distribution is not homogeneous and this particular sample is more likely to be closer together and within easy earshot. However, it may also indicate that wave powered CAS locations are more susceptible to congestion and that the management of these sites requires specific attention.

Furthering this argument Tables 5.39 and 5.40 show that there was a significant association between CAS participants who had encountered verbal hostility (App. 4; Chi-Square ( $\chi^2$ )  $p = 0.01$ ) and gesticular hostility (App. 4; Chi-Square ( $\chi^2$ )  $p = 0.01$ ) and those who had been involved in a collision. CAS participants that encountered verbal and gesticular hostility are more likely to have been involved in a collision and it was shown in Section 5.4.3 that wave powered craft are more likely to have been involved in a collision than other types of craft. Furthermore, because hostility is a clear indicator of CAS participant frustration, it is linked to perceptions of risk and a reduction of quality of experience, which in turn are linked to saturation levels and/or incompatibility configurations.

	<table><tr><th>Type of Hostility</th><th>No</th><th>%</th><th>Yes</th><th>%</th></tr><tr><td>Verbal</td><td>98</td><td>46.9</td><td>111</td><td>53.1</td></tr><tr><td>Gesticular</td><td>121</td><td>57.9</td><td>88</td><td>42.1</td></tr><tr><td>Physical</td><td>188</td><td>90.0</td><td>21</td><td>10.0</td></tr></table>				Type of Hostility	No	%	Yes	%	Verbal	98	46.9	111	53.1	Gesticular	121	57.9	88	42.1	Physical	188	90.0	21	10.0
Type of Hostility	No	%	Yes	%																				
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Physical	188	90.0	21	10.0																				
	<p>Table 5.35: Respondent Encounters with Hostility</p>																							

	<p>Figure 5.10: Respondent Encounters with Verbal Hostility, Terms of Participant CAS by Power Category</p>			
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## 5.7 Results relating to Stage One: Sub Section Three - Objective Four

### 5.7.1 CAS Activity Knowledge from the Perspective of the CAS Participant

(Questions 18 – 27)

Another objective of the CAS fieldwork was to explore respondents’ sporting knowledge. One method of achieving this was to enquire if the respondent was aware of the Sporting Codes of Practice (SCP) that are attached to the individual CAS. Table 5.41 shows that

56% of the sample perceived that they had a high knowledge in regards to SCP although 44% perceived that they had a low to medium knowledge.

This information is linked to Section 5.4.1 which showed that CAS interviewees' perceptions of self-ability in some cases can be assumed to be based on the participants' knowledge which has been derived from informal sources and personal experiences. This point is vital to CAS sustainability because coastal managers must ascertain if CAS participants are implementing SCP from poor information sources. This is because these types of information systems are dominated by 'self-regulation concepts' which complicate management.

Knowledge of SCP	Frequency	Percent %
None-Low	19	9.1
Medium	73	34.9
High	117	56.0
Total	209	100.0

Table 5.41 Respondents' Knowledge of Sporting Codes of Practice (SCP)

The location of interview affected the recorded perceptions of CAS participants in relation to the availability of SCP. Table 5.42 (App. 4; Chi-Square ( $\chi^2$ )  $p = 0.001$ ) reveals that CAS participants who were interviewed in Plymouth and Falmouth perceived that SCP were more accessible than respondents from other sample sites. Furthermore, participants interviewed at Marazion are more likely to perceive that SCP are not accessible.

Further analyses of the facilities available to CAS participants at the sample locations suggest that accessible infrastructures have an effect on the participants' perceptions. For instance, the Plymouth CAS site has an extensive infrastructure with marinas, special retail facilities and yacht clubs and hence there are more opportunities for the CAS

participant to find out about SCP. In comparison, Marazion has very little infrastructure and the opportunities for CAS participants to learn about SCP easily are restricted. This further emphasises the importance of infrastructure and the way that strategic planning of amenities assists sustainable management.

A similar examination of respondents' perceptions of the effectiveness of SCP and the location of interview did not show any statistical significance. This suggests that in the first instance SCP accessibility is the limiting factor for take up.

Table 5.43 shows that there is a significant (App. 4; Chi-Square ( $\chi^2$ )  $p = 0.01$ ) statistical relationship between CAS participants' perceptions of the public accessibility of SCP and their encounters with verbal hostility. A significant number of participants who have encountered verbal hostility perceive that SCP are not accessible. Verbal hostility is the most common form of hostility and has been observed by CAS participants of all abilities but especially those from the experienced level. Table 5.43 suggests a link between verbal hostility and a lack of CAS participant knowledge of SCP and this emphasises the importance of SCP accessibility for sustainable CAS management practices.

The findings from the data shown in Table 5.44 further reinforce the outcomes shown in Table 5.43 because they demonstrate that a significant (App. 4; Chi-Square ( $\chi^2$ )  $p = 0.001$ ) relationship exists between CAS participants' perceptions of the accessibility of SCP and their encounters with gesticular hostility. Participants who have encountered gesticular hostility are more likely to perceive that SCP are not publicly accessible.

Further examination of the questionnaire answers relating to the CAS participants' perceptions of the accessibility of SCP revealed that the participants' level of ability is not a significant factor and a similar result was obtained in terms of perceptions of SCP

effectiveness. The CAS categories of visitor or resident are also not associated with CAS participant perceptions of SCP accessibility or effectiveness. These results support the notion that SCP are currently not effective. This is a critical finding because SCP are identified by government as a mechanism by which CAS may be correctly managed.

The SCP are produced and disseminated by the National Governing Bodies (NGB) associated with each CAS (e.g. Royal Yachting Association (RYA) etc). Therefore, respondents were asked if they were a member of their CAS NGB or alternatively a member of a different organisation. Table 5.45 shows that 76% of respondents were not NGB members and 24% were members. Furthermore 63% were not members of any sporting related organisation and 37% were members of a different related organisation. This is fundamental to this study because Section 3.8.3 showed that the Government Plan for Sport (DCMS, 2001) stressed that during the year 2000 the Government had pledged (over three years) some £7 million funding for the devolution of greater responsibility to NGB. This emphasises the importance of NGB in the CAS management process. The dissemination of the correct SCP to participants of CAS is critical to the development and sustainability of CAS. Moreover, because NGB produce SCP, the affiliation to these organisations by CAS participants is also significant. Furthering the examination of NGB membership the variables 'powered' and 'ability' were used to provide a simple overview.

Response	Frequency	Percent %
Member of NGB		
YES	50	23.9
NO	159	76.1
Member of Other		
YES	77	36.8
NO	132	63.2

Table 5.45      Respondent Affiliation to NGB and Other Organisations

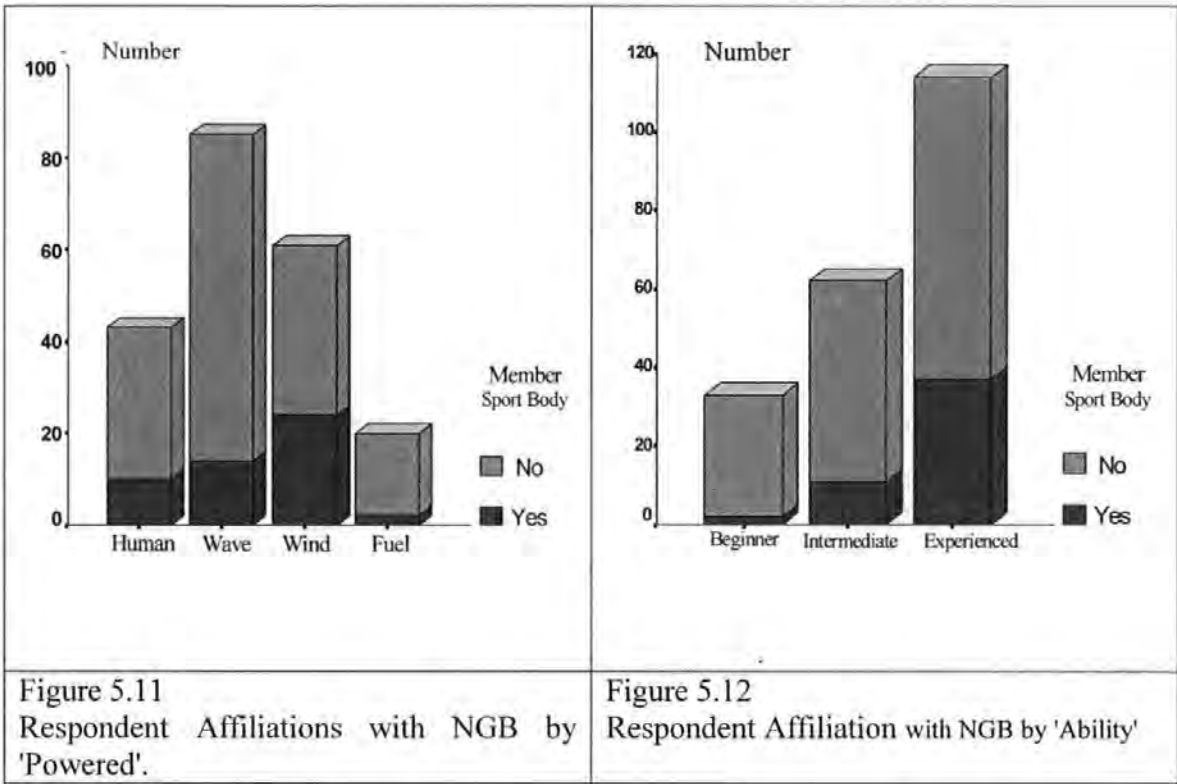


Figure 5.11 shows that participants of wind related CAS have more membership of NGB than those of wave, fuel and human powered CAS. This supports a line of reasoning that there may be differences to the way the wind powered NGB have evolved in comparison to other CAS NGB. Figure 5.12 shows that a significant number of CAS participants who perceive themselves to be at an experienced level are not affiliated with an NGB which supports the earlier argument of ‘unknown information’ breaching good information links. There is, conversely, a significantly higher proportion of the sample who also perceive themselves as ‘experienced’ that are members of a NGB, which implies that these CAS participants are more likely to have undergone periods of formal instruction. This argument is important for coastal managers because it suggests that NGB can act as a mechanism that will encourage the development of sustainable practices.

Table 5.46 shows that the CAS sample are only affiliated to four of the recognised NGB. Other CAS participants have affiliations to alternative organisations. For instance,

Surfers Against Sewage (SAS) are an environmental pressure group which have little interface with CAS management practices. However, Table 5.46 shows that this organisation has a larger percentage of the sample affiliations in relation to NGB, such as the British Surfing Association (BSA). This indicates that CAS participants may choose to gain an affiliation with only one organisation, or that the presentational style and purpose of SAS is more successful than that of the BSA. Coastal managers must be aware of the potential for such CAS participants to be excluded from SCP systems. However, this also suggests that issues relating to the marine environments contribute to the CAS participants' perceptions of 'quality of experience' and hence environment related dissemination systems may provide a conduit for CAS information and vice versa.

### **5.7.2 National Governing Body (NGB) Membership**

An examination was made of the relationship between sample sites and CAS participant NGB membership for instance, Table 5.47 shows that participants from Falmouth, Plymouth or Marazion were more likely (App. 4; Chi-Square ( $\chi^2$ )  $p = 0.01$ ) to have NGB membership than the other sample locations. This is interesting because it was suggested in Section 6.2.1 that the infrastructure available at Falmouth and Plymouth affected the accessibility of SCP and although Marazion infrastructure was observed to be different, its association with NGB membership suggests that several factors may be involved in the Site – SCP – NGB relationship.

Testing the questionnaire data shows that there is a significant statistical relationship between the CAS participants of different power craft type and the location of interview. Table 5.48 (App. 4; Chi-Square ( $\chi^2$ )  $p = 0.001$ ) shows that Falmouth (including marinas), Plymouth and Marazion have higher numbers of wind powered activities than would be expected and that, in addition, Falmouth also hosts a higher number of fuel powered craft than expected. Newquay and St Agnes, in comparison, host larger numbers of human and

wave powered activities. Table 5.48 shows that the link between site and NGB membership is associated with the type of craft power source because a number of particular sites are shown to contain large numbers of 'specific' power activities. Table 5.49 indicates that a statistically significant relationship (App. 4; Chi-Square ( $\chi^2$ )  $p = 0.005$ ) exists between NGB membership and the type of CAS participant craft power source. The results show that the participant in a wind powered CAS craft is more likely to be a member of a NGB than those CAS participants who take part in other CAS activities. Overall, those who take part in wave related activities are less likely to be members of a NGB. This is important to coastal managers particularly in relation to wave powered NGB because it emphasises how the strategy used by the NGB for wind powered craft is functioning in an effective manner. However, this point will require further investigation because other factors (such as NGB support funding) may have stimulated this relationship.

Table 5.50 shows that a statistically significant relationship (App. 4; Chi-Square ( $\chi^2$ )  $p = 0.003$ ) exists between NGB membership and CAS participant ability. The more experienced CAS participant is more likely to be a member of a NGB and the beginner less likely. This suggests that beginners and intermediate CAS participants are gleaning information, which may be perceived as 'SCP', from informal sources (discussed with Table 5.43). Additionally NGB affiliation has a positive effect on the perceived experience of a CAS participant.

It seems that NGB affiliated CAS participants are more likely to have undertaken training courses and have formal knowledge of their CAS and it emphasises to coastal managers that beginner and intermediate CAS participants derive (perhaps inappropriate) information informally. Therefore beginner and intermediate CAS participants should be managed as specific target groups. Furthering this exploration there was a very close



relationship between the age range of the participants and membership of NGB Table 5.51 shows that there was close association (App. 4; Chi-Square ( $\chi^2$ )  $p = 0.06$ ) between the age range of CAS participants and membership of NGB. Those who were 16-25 or 36-46 were more likely to be members of a NGB; those aged between 26-35 were least likely to be members of a NGB. Coastal managers therefore could also target the 26-35 age group for the development of NGB affiliations.

Table 5.52 shows that although total club affiliations are boosted by non-NGB club sources it is the experienced CAS participant that is most likely to be a member (App. 4; Chi-Square ( $\chi^2$ )  $p = 0.001$ ). Results show that there is a statistically significant relationship between the possession of NGB membership and the CAS participant perceptions of a reduction in the 'quality of experience' that is associated with interactions which occur with other CAS participants in the sporting landscape. Table 5.53 shows that CAS participants who have NGB membership are less likely to perceive a reduction in the 'quality of experience' when they interact with others in the CAS environment (App. 4; Chi-Square ( $\chi^2$ )  $p = 0.04$ ). This is important because it shows a distinct relationship between harmonious CAS participant interactions and NGB membership. The results indicate that those with a formal knowledge of their sporting environment are more adept at interaction than others. This further suggests that coastal managers should give priority to developing NGB affiliation.

Having uncovered whether the respondent had knowledge of SCP and was or was not a member of an organisation, Question Nineteen asked the respondent to offer their opinion as to the accessibility and effectiveness of SCP. Table 5.54 shows that 55% of the sample perceived that SCP were not easily accessible to the general public and 39% of the sample also perceived the SCP were not currently effective for their sport.

Figures 5.11 and 5.12 show that CAS participant affiliation to NGBs is relatively low; in particular, the majority of self-assessed experienced CAS participants also confirm no NGB affiliation. Therefore, a majority of experienced CAS participants has obtained CAS information from unknown sources. This factor will influence the concept of self-regulation because self-regulation is dependant on knowledge derived from known formal sources; however, this work has shown that current information may in fact be deriving from informal and possibly incorrect sources.

Response	Frequency	Percent (%)		Frequency	Percent (%)
Accessibility of SCP			Effectiveness of SCP		
Yes	95	45.5	Yes	127	60.8
No	114	54.5	No	81	38.9

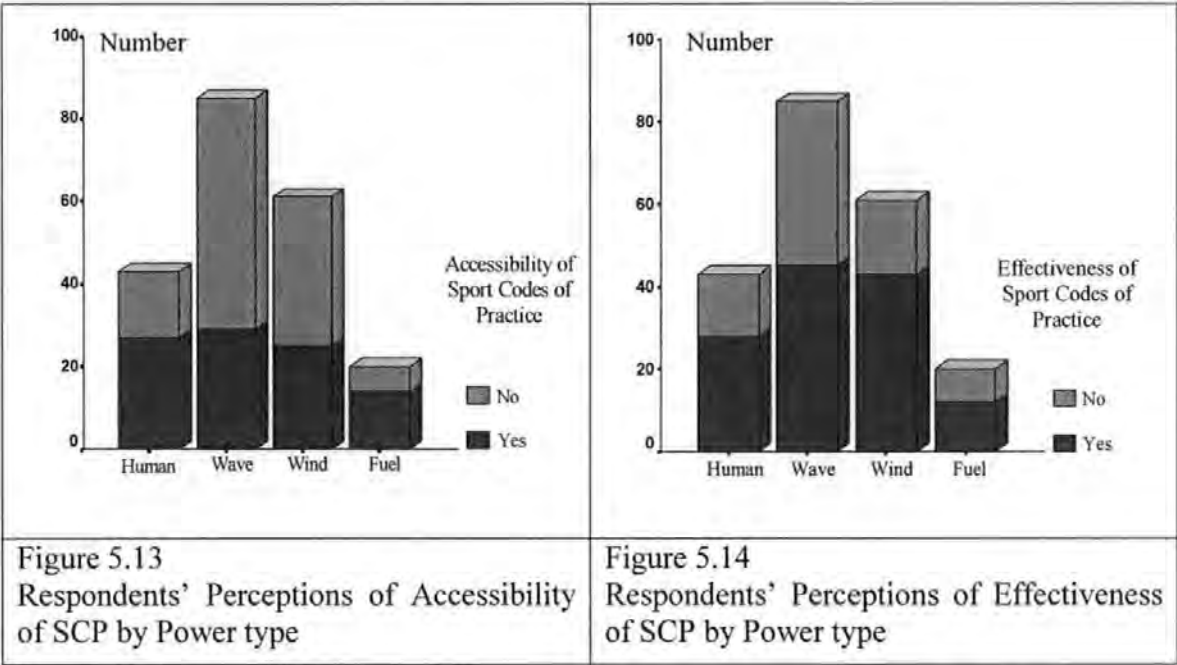
Table 5.54 Respondents' Perceptions of Accessibility and Effectiveness of SCP

Figure 5.13 shows a difference between human and fuel powered craft and wave and wind CAS in relation to whether their SCP is accessible to the general public. Further statistical examination showed that the power source was an important 'accessibility' factor. Table 5.55 shows that there was a significant association (App. 4; Chi-Square ( $\chi^2$ )  $p = 0.02$ ) between CAS participants who perceived SCP to be accessible and the power source of their craft. Those from human and fuel powered activities were more likely to perceive that SCP was accessible, while those participants from wave and wind powered activities were least likely to perceive SCP accessible. Further statistical examination confirmed that this was linked to the location of interview. Table 5.56 shows that there was a significant association (App. 4; Chi-Square ( $\chi^2$ )  $p = 0.01$ ) between CAS participants who perceived SCP to be accessible and the location of interview. Those from Falmouth and Plymouth were more likely to perceive SCP accessible and those participants from Newquay and St Agnes were less likely to perceive SCP effective and participants from the Marazion location were least likely to perceive SCP accessible. It

may be assumed that this may be associated with good supporting infrastructures such as cafes and specific CAS shops because Marazion has little infrastructure and this would make SCP accessibility more difficult for the casual participant.

Figure 5.14 shows that a higher number of wave CAS participants perceive that SCP are currently not effective for their CAS. This links into the earlier discussions that show wave powered participants to be more likely to encounter hostility. Further statistical testing confirmed that the Newquay location was an important factor to participants' perceptions of the effectiveness of SCP. Table 5.57 shows that there is a significant association (App. 4; Chi-Square ( $\chi^2$ )  $p = 0.05$ ) between CAS participants who perceived SCP to be effective and the location of interview. Those from Falmouth and Plymouth were more likely to perceive SCP effective and those participants from Marazion and St Agnes were less likely to perceive SCP effective participants from Newquay were least likely to perceive SCP effective.

Hence there is a strong suggestion that SCP or lack of CAS knowledge in the water is perceived by some CAS participants to be instrumental in the occurrence of hostility. Additionally, because participants of wave powered craft are also more likely to have been involved in hostile interaction, there is an implication that the NGB that represents wave powered activities may require independent research into the effectiveness of their SCP.



### 5.7.3 Respondents' Knowledge of the Management Structures that are Associated with CAS Activity (Questions 23 – 27)

The CAS survey also examined the respondents' knowledge of management structures that regulate or control CAS. These structures may derive from central government in the form of policies and bylaws or from alternative sources such as the local council guidelines or the lifesaving services.

Questions Twenty-three and Twenty-four asked the respondents if they were aware of any policies or guidelines relating to their sport and if they perceived them to be effective.

Response	Frequency	Percent (%)
Aware of Policies and or Guideline		
Yes	98	46.9
No	111	53.1
Policies and Guidelines Currently Effective		
Yes	72	34.4
No	112	53.6
Not-Know	25	12.0

Table 5.58 Respondents' Awareness and Perception of the Effectiveness of CAS Management Structures

Table 5.58 shows that over 50% of the sample was unaware of any regulating or control mechanism relating to their CAS and, furthermore, over 50% also perceived that CAS policies and management guidelines are currently ineffective for their CAS. Figure 5.15 shows that a number of those who take part in wave related activities are less aware of regulation and control structures than those who take part in alternative activities.

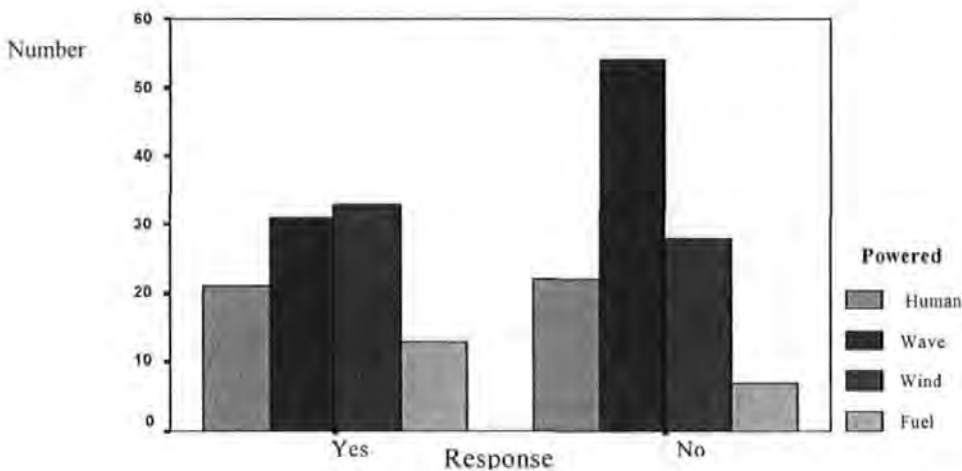


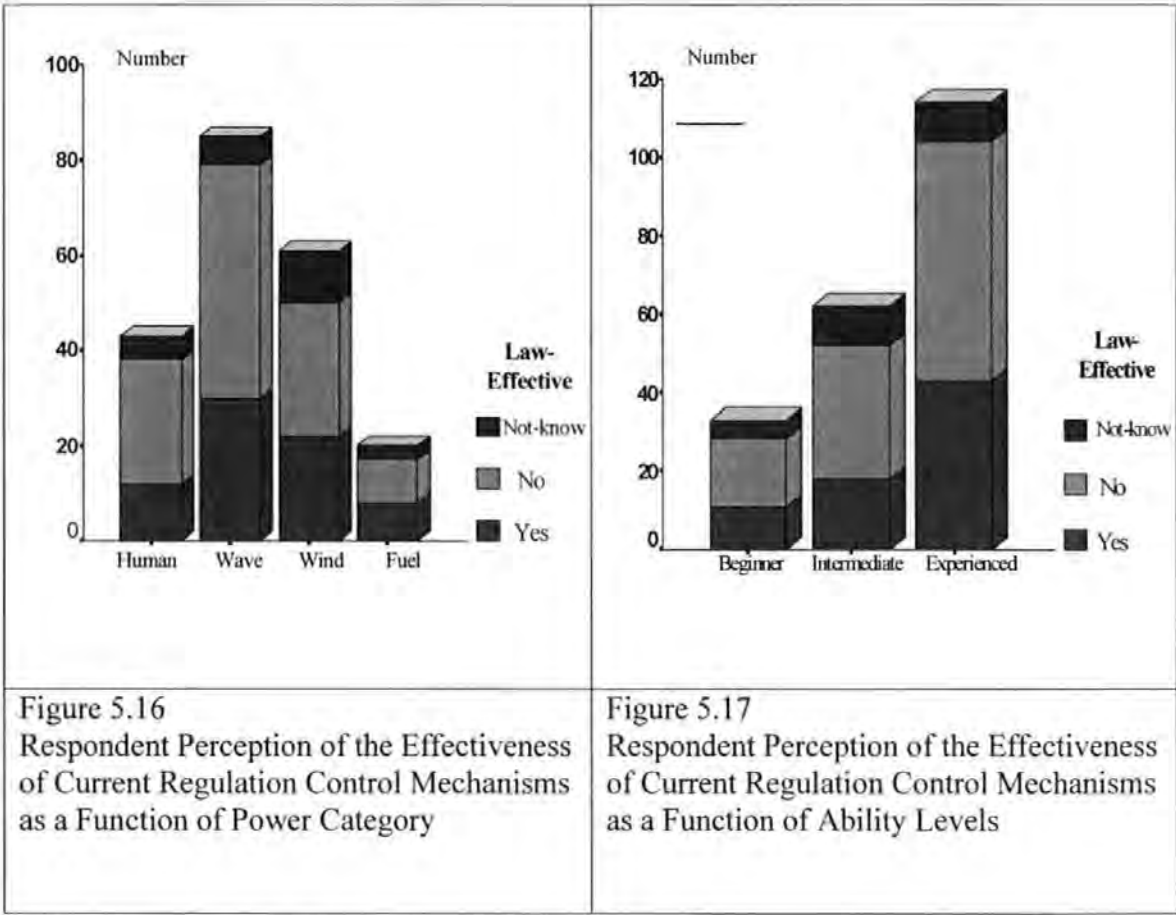
Figure 5.15: Respondents' Awareness of Current CAS Regulation and Control Structures

This general lack of understanding of the *in situ* control mechanisms that manage CAS sites further emphasises how breaches in formal information structures serve to perpetuate a lack of participant awareness. A number of links can be made using the above results. For instance, wave powered participants are shown by this study to be the most likely to have encountered collision and hostility, and Figure 5.15 shows this group to have a particularly low awareness of *in situ* management control structures.

Using power categories and self-perceived ability levels as dependent variables, the respondents' perceptions of the effectiveness of regulatory and control mechanisms have been further examined.

Figure 5.16 shows that a significant majority of all the CAS participants perceive that regulation and control mechanisms are ineffective in the current CAS climate. This opinion must be based on some type of reasoning and because this study has consistently shown that collision and hostility are prevalent on the coastal fringe, it may not be unreasonable to suggest that CAS participants perceive that the current overall management to CAS is part of the cause.

Figure 5.17 presents the data measured by the respondents' perception of their self-ability. This suggests that the participant from all ability levels consider that regulation and control mechanisms are ineffective in the current CAS climate. This links to CAS participants' perception of risk, the occurrence of collision, encounters with hostility, reduction of quality and perceived inability to access the correct information.



Questions Twenty-five and Twenty-six of the survey asked the respondents if they could identify the main regulating management structure/organisation at the location of interview. Hence, the CAS respondent had an opportunity to survey the environment within which s/he was participating. Furthermore, the respondent was also asked if they could identify any other type of marine management structure/organisation at any other location. Table 5.59 shows that 17% of the sample did not recognise any structure at all, 57% noted lifeguards and 17% the harbour authorities.

Table 5.60 shows that there is a statistically significant relationship (App. 4; Chi-Square ( $\chi^2$ )  $p = 0.001$ ) between CAS participant self-perceived ability and their awareness of government CAS policies and management structures. Experienced CAS participants are more likely to be aware of government policies and management structures than those of a lesser ability. Further to this enquiry Table 5.61 shows that a significant relationship (App. 4; Chi-Square ( $\chi^2$ )  $p = 0.05$ ) exists between CAS participant awareness of government policies and CAS management structures and their craft power source. Those who take part in wave related activities are less likely to be aware of government policies and CAS management structures than other types of CAS activity. This could possibly be linked to age because Chapter Five showed that the 16-25 age group typically take part in wave powered CAS. (This possibility is supported by the data in Table 5.62 which identifies a statistically significant relationship between age group and the CAS participant awareness of government policy and CAS management structures). Table 5.62 shows that the 16-25 year age group are less likely to have an awareness of government policy and CAS management structures than older age groups (App. 4; Chi-Square ( $\chi^2$ )  $p = 0.01$ ). However it was shown earlier that 'experienced' CAS participants are more likely to be affiliated to NGB, hence they are more likely to recognise government policy and CAS management structures. This implies that NGB affiliation

assists in the dissemination of CAS management information to CAS participants. Therefore coastal managers should ensure that when promoting policies they aim at beginner and intermediate CAS participants and apply particular focus to those that take part in wave-related activities and target visitors to the site.

Finally Table 5.63 shows a significant relationship (App. 4; Chi-Square ( $\chi^2$ )  $p = 0.02$ ) between visitor or local status and a lack of awareness of policies and management structures i.e. visitors are less likely to be aware of management structures than local CAS participants.

## **5.8 Summary**

The results discussed here have provided an insight into CAS participants' perceptions of their sporting landscape in the year 2000. These results will go some way to providing response to the objectives of this work. These include:

### **Objective One**

To determine if there is a character profile attached to the participants of CAS and if that profile differs for the independent activities.

### **Objective Two**

To investigate if there is a difference in the attitudes and perceptions of individual CAS participants to the criteria associated with 'quality of experience'.

### **Objective Three**

To identify the differences in the attitudes and perceptions of individual CAS participants relating to coastal loading, risk and safety issues.

### **Objective Four**

To accumulate information in relation to the variability of understanding of CAS participants of issues of policies and management programmes that regulate CAS.



The issues that these results have revealed will also inform coastal managers decision-making processes and will direct the further statistical analysis of the study.

The results have revealed a number of factors that have influenced the way that CAS activities have evolved and that a number of issues will require further research. However the work reported here delineates specific mechanisms by which a CAS management system may develop. Predominately the results of the 2000 investigations have shown that National Governing Bodies (NGB), Sport Codes of Practice (SCP), and Government CAS Policy and Management Structures are central to the sustainability of CAS. These in turn are linked specifically to issues relevant to the CAS participants themselves, the location of the activity, and the nature of activity. The importance of all these issues to coastal loading is salient.

For instance, the results have shown that participants of wave powered activities are drawn from a younger age range than other CAS and that because age-groups are linked to ability levels a particular focus on this age group could be formulated. Additionally, wave participants have been shown to be more likely to choose an affiliation with Surfers Against Sewage and this reduces the likelihood of these CAS participants joining the wave related NGB. Hence wave powered participants are likely to be young and inexperienced with no information relating to SCP.

The 'quality of experience' derived from CAS participation is shown by these results to be entrenched in motivational elements such as, individuality, culture and escapism. Examination of the factors associated with 'quality' showed that other people's attitudes, abilities, and overcrowding of a location were regarded by a statistically significant

majority of participants to be of high priority. In particular emphasis is placed on the importance of the links between 'attitude' to 'quality of experience'. Therefore, because participants recognise these elements of 'undesirable' attitude, and this is recorded as influencing their quality of experience, there is a suggestion that there is a link to the resource being congested or reaching saturation. Hence, undesirable 'attitude' is probably the effect of the perceived legitimisation of the activity resource (water space) by a power group. This is an important factor when coupling the data with issues of perceived risk, because a statistically significant majority of respondents also perceived that the interaction with others heightened their awareness of risk.

Craft type and ability affect the scoring of risk, because CAS participant perception of risk is heightened when they interact with others, especially when they perceive others to be of a lesser ability and/or using a different craft. This is a paradox because there is evidence that 'socialisation' during CAS participation is a desirable quality, although the risk associated with interaction is undesirable. Therefore, the probability that a relationship exists between CAS participant perception of quality and risk can be assumed because the results have shown that this can possibly be determined by numbers and available waterspace. Furthering this assumption is that, in comparison to wind and fuel powered CAS, human and wave powered participants show a statistically significant higher perception of risk and a reduction of enjoyment when interacting with others. Additionally wave powered craft in particular are shown to have higher incidents of collision than other activities. The method of propulsion may also have affected the scoring because those using human or wave craft are generally restricted to the surf zone, whilst those using wind or fuel craft have the versatility to move through more open waters. This further intensifies the issues relating to compatibility ideals and will require further statistical testing.

These results have also shown that CAS wave participants are statistically more likely to have been involved in a collision and perceive that they are more likely to have been responsible for an accidental collision. This deepens the argument that these types of craft are more likely to be in saturation zones. There are special considerations that need to be applied to wave powered activities and it is becoming evident that these types of activity require more immediate attention than activities from alternative power sources. For instance, age, NGB affiliation and the fact that wave activities require little equipment with which to participate makes the activity far more accessible to a wider participation group. This makes this particular group far more susceptible to 'participant' differentiation. Therefore, it will be vital to this study, and especially to wave powered activities, to ascertain the significance of the perception by CAS participants of their toleration of CAS multi-interaction in relation to craft and space.

It is also apparent that the majority of respondents have encountered verbal hostility. Hostility is perceived by this study to have clear links to congestion and saturation of locations. The results show that the levels of hostility increase with the self perceived ability of the participant. For instance, the intermediate group is statistically more likely to have encountered gestural hostility but it is the experienced group for which physical hostility becomes important. Hence, a significant relationship exists between ability and encounters with hostility, which suggests that tolerance levels often fluctuate and that experienced participants are perhaps more likely to have lower levels of tolerance when interacting with other participants. This will require independent research because hostility is linked to saturation levels being reached or exceeded.

The importance of SCP to the CAS landscape is emphasised by the significant relationship shown between the perceived accessibility of SCP and CAS participants' encounters with verbal and gesticular hostility. This relationship is further supported because being a beginner, intermediate, or experienced participant or a visitor/resident does not affect this observation. Furthermore, no significant relationship was shown to exist between CAS participants' perception of the effectiveness of SCP and the sample location or to the participant's ability or visitor / resident status. This illustrates how CAS participants can have grass roots knowledge of the existence of SCP and their effectiveness. Moreover, the lack of public accessibility of SCP will hinder the sustainable development of CAS safety and management. Therefore, coastal managers should recognise that lack of public access to SCP by CAS participants will cause unsustainable practices to develop.

The methods of SCP dissemination to CAS participants also require an independent examination. This is because a statistically significant majority of CAS participants perceived that SCP are inaccessible and thus ineffective. This situation is exacerbated because the results also reveal that a statistically significant majority of self-perceived 'experienced' and 'intermediate' respondents have no affiliation with an NGB and have received no formal instruction in their activity. Hence, there is a clear indication that CAS participant self-perceived ability is based on personal experience and information gleaned from informal sources and because these types of communication exchanges are noted by this study to produce and perpetuate unsustainable practices, research is required to investigate the relationship between CAS participants' NGB, SCP, perceptions of ability and the self-regulation concept. NGB are the UK Governments' chosen vehicle for SCP, and this work has shown that a membership of these organisations has low priority for CAS participants (over 76% of the respondents were non-members). CAS

participant encounters with hostility and perceptions of risk are linked to SCP which in turn are directly linked to NGB and therefore have a bearing on participant hostile interaction. There is also a clear management link to UK Government in that the sport management is being devolved to NGB, and any non-functional aspects of the NGB role will have consequences for CAS management.

Management mechanisms such as policies and structures are considered by a statistical majority of the respondents to be ineffective, especially where participants perceive themselves as experienced or when they take part in wave powered activities. This indicates that current CAS management structures are not acting in a sustainable manner because the self-regulation concept works via good information exchanges. The *in situ* management control mechanisms, in conjunction with government policies, are vital to the sustainable development of CAS. Hence, because the results have shown that the majority of CAS participants have no knowledge of the existence of these policies and structures, it suggests that poor practices are developing and CAS is progressing in an unsustainable manner.

Education and Training has been identified by this study as important for CAS participant safety, and Chapters Two and Three have identified the individual CAS NGB as playing a lead role in the delivery of SCP. However, access, location and availability of SCP to CAS participants are particularly important. For instance, CAS participants from Plymouth are more likely to perceive that SCP are accessible than participants that frequent other locations. This is linked to the developed infrastructure at Plymouth which acts as an ideal site for participants to obtain SCP. CAS participants from Marazion were identified by this work as being less likely to perceive that SCP are accessible and this may be linked to the fact that the Marazion site has very little CAS support infrastructure.

Therefore coastal managers may capitalise on this information by investigating the types of infrastructure that are encouraging correct information exchange in Plymouth and developing similar exchange mechanisms at other locations.

The data shows that there is a significant statistical relationship between CAS participants of different power craft type and the location of interview. These results confirm that some CAS are drawn to specific sites and suggest that CAS populations are attracted by both natural and manmade CAS infrastructures. Therefore, careful planning of manmade infrastructures may serve to increase the 'use value' of a location and contribute to management mechanisms. For instance, the provision of a strategically sited launchway specifically for smaller vessels such as canoes or windsurfboards would encourage compatible interactions and reduce interaction with conflicting CAS activities. In addition, the results reveal that the majority of CAS participants own vehicles and are prepared to travel an average of 25 miles to a site. Hence car parking in conjunction with clear information boards could serve to reduce CAS participant saturation levels at particular sites by redirecting participants to less congested sites.

Where these issues have been examined it is clear from the results generated from the statistical testing that there are a number of linked factors that affect the CAS landscape.

The statistical tests (App. 4) show that the location was strongly linked to the type of craft used in a CAS activity. Coastal managers may use the archetypal locations selected for this study to help develop sustainable CAS management for specific locations i.e. this study has shown that the different location types encourage different CAS activity types and generate specific problems.

This study has also shown that there are significant relationships between certain CAS participants during the consumption of a CAS resource and that this causes conflicts and conflixtions. However the analysis has also identified the manner in which CAS participant perceptions can indicate to coastal managers that saturation levels are being reached at a location. These data can act as an indicator or tool for the development of site-specific sustainable management strategies. For instance, Table 5.23 and 5.24 shows that a significant relationship exists between CAS participant perceptions that ‘attitude’ and ‘ability’ can affect their activity and the Falmouth location. This would suggest to coastal managers from Falmouth that incidents relating to ability are beginning to cause the development of unsustainable practices.

The instinctive reaction of CAS participants to perceptions of undesirable risk is linked to hostility, and there is a significant relationship between CAS participants that perceive that they are exposed to risk when interacting with others and the reduction of their overall quality of CAS experience. This suggests that these CAS participants have participated in their activity in a congested CAS resource at saturation point. The reduction in ‘quality’ is important because this study has shown that CAS assists in personal development and social cohesion. This positive outcome of CAS participation is negatively affected by activities reaching saturation level because they cause the development of conflict and conflixtion. Hence the assessment of the carrying capacity at any single location is vital.

Section 5.6 discussed Objective Three of this study (i.e. to identify the differences in the attitudes and perceptions of individual CAS participants relating to coastal loading, risk and safety issues). However, because some of the results of this examination contributed directly to the aim of the study (which was to identify the compatibility levels for the

coexistence of certain sports and the carrying capacity for the activities that can be attached to locations in the coastal environment) it was decided that these results should 'stand alone' and be discussed in the following chapter (Chapter Six). Hence, Chapter Six focuses on the perceptions of CAS participants in relation to compatibility levels for the coexistence of their sport with alternative CAS activities from the perspectives of risk and quality. This will allow examination of the carrying capacity for CAS activities.



### 6.0 Introduction

Chapter Five showed that CAS participant conflicts occur and that a number of factors contribute. Several important findings result from the study. It is clear that CAS participants experience all types of hostility (verbal, gesticular and physical) and this can be linked to their perceptions of undesirable risk, in that they perceive that they are exposed to an increase of risk when interacting with others in the same water space. Therefore it is important that coastal managers' management mechanisms include a versatile tool that will minimise or eradicate these causes of conflict.

It is also clear that current CAS management mechanisms do not function in an effective manner. For instance, this occurs in relation to Sport Codes of Practice (SCP) where there are significant links between the perceived inaccessibility of SCP and CAS participants' encounters with verbal and gesticular hostility. Chapter Five also revealed that management issues associated with National Governing Bodies (NGB) were linked to problems associated with SCP. Additionally it was evident during the analysis of the year 2000 data that CAS participants also have very little understanding of government policies and the management structures that govern CAS.

These issues relate to the CAS overarching management structure and suggest that the 'executive' management structure of CAS may not be operating effectively. This failure of management structures will impinge upon all aspects of CAS.

Perhaps more importantly than a general failure of management, Chapter Five has also shown specifically that the location of a CAS resource is significant in that locations can

have special attractors for certain activities. Hence, in addition to changes in the overarching management structures, it is apparent that site-specific management strategies and targeted management tools need to be developed to (amongst other things) reduce the probability of CAS participation reaching saturation levels. This work clearly shows that saturation is linked to conflict and the reduction in the quality of CAS experience for the participants. Hence a coastal manager requires versatile management tools that incorporate the prior assessment of location carrying capacities. This Chapter will therefore concentrate on stage one, sub-section three, objective three of the year 2000 field work, the purpose of which was to examine the differences in the attitude and perceptions of individual CAS participants to issues of coastal loading, risk and safety. The results of this informed the main aim of Stage One to allow the development of the management tool discussed above.

The aim of Stage One was to:

To identify the compatibility levels for the coexistence of certain sports and the carrying capacity for these activities that can be attached to locations in the coastal environment. This would then act as an aid for effective water-space management for multi-use aquatic sports and recreation and inform future coastal management and planning.

And, in relation to this, Chapter Six will focus on the location specific compatibility elements identified from the year 2000 survey via the answers to Question 17 which asked CAS participants to:

- (i) first consider their personal safety and the quality of their sporting experience and;
- (ii) a guess of how many individual craft/persons were compatible with their CAS sport if they were given the water space the size of a football pitch for

their aquatic sport (*from a beginner, intermediate and an experienced participant perspective*).

The survey results showed that CAS participants linked risk with crowding and attitude issues and that their personal risk increased during interactions in the same water space. This implies that saturation levels were being reached at sites and that the interviewees experienced congestion. Hypotheses developed from the literature review and pilot study relating the probability of social interaction being linked to perceptions of quality in the CAS experience were also confirmed during analysis of the year 2000 data. In coupling these observations with information relating to risk, there is evidence to suggest that an average 'ideal' number of CAS participants in a multi-use CAS environment may be estimated from the participant perspective and that this could provide a simple location specific management tool for coastal managers. A more detailed estimation of the issues raised above is performed below; this, in turn, leads to the creation of an appropriate management tool as described in Section 6.3.

The interviewee's (craft) power source was used as the principal variable for statistical analysis in relation to compatibility issues and a means or t-test was applied to the differences to determine the perceived 'safe' number of CAS participants for (ideal) interaction. Question 17 provided the interviewee with pre-determined spatial boundaries for their CAS. Additionally the question requested information concerning the preferred number (acceptable/non-acceptable participation levels in a fixed zone) of participants from the categories of beginner, intermediate and experienced. With the exception of the combined mean tables, the tables revealing the results of the statistical tests are catalogued in Appendix 4. The results are presented below (6.2) by detailing the table number, the type of test and the probability level.

## **6.1 Results from Year 2000 Study: CAS Participants' Perceptions of Coastal Loading**

**6.1.1** Table 6.1 shows that human powered participants have a statistically significant higher tolerance of swimmers that are beginner (App. 4; *t* test.  $p=0.005$ ), intermediate (App. 4; *t* test.  $p=0.001$ ) and experienced (App. 4; *t* test.  $p=0.001$ ) than wind powered participants.

Similarly Table 6.2 shows that human powered participants have a statistically significant higher tolerance of beginner (App. 4; *t* test.  $p=0.007$ ), intermediate (App. 4; *t* test.  $p=0.001$ ) and experienced (App. 4; *t* test.  $p=0.001$ ) swimmers than fuel powered participants.

These results suggest that those who take part in wind and fuel related activities would prefer not to interact with swimmers at all and therefore swimmers should be separated from craft that function using these power sources. There is no significance associated with swimmers and wave powered activities and this suggests that swimmers have the least impact (compared to wind and fuel-powered CAS) upon these activities.

Table 6.3 shows the *t* test average scores<sup>1</sup> for all the categories and this shows that it is the beginner swimmer that is the least desirable for all four power source categories and the experienced swimmers most tolerated (in particular by wave powered activities). The fuel powered CAS participants show that they have the least tolerance to swimmers overall.

This is important to the study as the very low/negative tolerance levels of swimmers by wind and fuel powered activities indicate that these are not compatible with swimmers.

<i>Swimmer</i>	Human	Wave	Wind	Fuel
Beginner	2.907	1.129	0.491	0.500
Intermediate	4.534	2.800	1.163	0.650
Experienced	6.674	5.329	1.245	0.800

Table 6.3 Total Mean Tolerance Levels for CAS Swim Participants

**6.1.2 CAS General Population Tolerance Levels for Bodyboard**

Table 6.4 shows human powered participants have a statistically significant higher tolerance of the bodyboard beginner (App. 4; *t* test.  $p=0.045$ ), intermediate (App. 4; *t* test.  $p=0.032$ ) and experienced (App. 4; *t* test.  $p=0.011$ ) than wind powered participants.

Table 6.5 shows that human powered participants have a statistically significant higher tolerance of the bodyboard beginner (App. 4; *t* test.  $p=0.003$ ), intermediate (App. 4; *t* test.  $p=0.001$ ) and experienced (App. 4; *t* test.  $p=0.006$ ) than fuel powered participants.

Table 6.6 shows that wave powered participants have a statistically significant higher tolerance of the bodyboard beginner (App. 4; *t* test.  $p=0.025$ ), intermediate (App. 4; *t* test.  $p=0.010$ ) and experienced (App. 4; *t* test.  $p=0.001$ ) than fuel powered participants.

Table 6.7 shows that wave powered participants have a statistically significant higher tolerance of the bodyboard beginner (App. 4; *t* test.  $p=0.005$ ) and experienced (App. 4; *t* test.  $p=0.001$ ) than fuel powered participants. There was not a statistical significant difference in the tolerance for intermediate bodyboard participants.

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<sup>1</sup> Numbers equate to persons desirable in an football pitch area, although numbers do not always round to a

Table 6.8 shows that wind powered participants have a statistically significant higher tolerance of the bodyboard intermediate (*App. 4; t test. p=0.047*) than fuel powered participants. There was not a significant difference in the tolerance for beginner and experienced bodyboard participants.

These results suggest that those who take part in fuel related activities would prefer not to interact with bodyboard participants of any ability and therefore bodyboard participants should be separated from craft using fuel power sources. Furthermore, those using wind power sources preferred not to interact with bodyboard participants that were of intermediate ability. The lack of statistical significance associated with bodyboard participants and those participants of human and wave powered CAS activities suggest that these are the most compatible with the bodyboard activity.

Table 6.9 shows the *t* test average scores for all the categories and these show that beginner bodyboard participants were the least desired by all four power source categories and that experienced bodyboard participants are most tolerated. The fuel powered CAS participants have the least tolerance of bodyboarding.

Bodyboard	Human	Wave	Wind	Fuel
Beginner	1.255	1.988	0.442	0.100
Intermediate	1.720	3.988	0.688	0.200
Experienced	3.372	5.611	1.393	1.100

Table 6.9      Total Mean Tolerance Levels for CAS Bodyboard Participants

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‘whole person’ they are important because by increasing the total water area, numbers would also increase.

The very low/negative tolerance of bodyboard participants by CAS participants of wind and fuel powered activities indicate that these are not compatible with bodyboarding.

### **6.1.3 CAS General Population Tolerance Levels for Shortboard**

Table 6.10 shows that wave powered participants have a statistically significant higher tolerance of the shortboard beginner (App. 4; *t* test.  $p=0.002$ ), intermediate (App. 4; *t* test.  $p=0.001$ ) and experienced (App. 4; *t* test.  $p=0.002$ ) than human powered participants.

Table 6.11 shows that human powered participants have a statistically significant higher tolerance of the shortboard intermediate (App. 4; *t* test.  $p=0.033$ ) than fuel powered participants. There was not a significant difference in the tolerance of beginner and experienced shortboard participants.

Table 6.12 shows that wave powered participants have a statistically significant higher tolerance of the shortboard beginner (App. 4; *t* test.  $p=0.001$ ), intermediate (App. 4; *t* test.  $p=0.001$ ) and experienced (App. 4; *t* test.  $p=0.001$ ) than wind powered participants.

These results suggest that those who take part in human and wind related activities would prefer not to interact with shortboard participants that are of beginner ability and therefore beginner shortboard participants should be separated from craft that function using those power sources.

Table 6.13 shows the *t* test average scores for all the categories and reveals that the beginner and intermediate shortboard participants are the least desirable of all four power source categories to those participants that partake in wind and fuel power source activities. These specific activities also show little tolerance of the experienced shortboard participant. Human power source activities have the highest tolerance of

experienced shortboard activities. However it is the participants of wave related activities that exhibit the most tolerance overall.

<i>Shortboard</i>	<b>Human</b>	<b>Wave</b>	<b>Wind</b>	<b>Fuel</b>
<b>Beginner</b>	0.441	1.129	0.262	0.100
<b>Intermediate</b>	0.953	2.788	0.442	0.200
<b>Experienced</b>	2.250	4.588	1.377	2.254

Table 6.13      Total Mean Tolerance Levels for CAS Shortboard Participants

The very low/negative tolerance levels of the beginner and intermediate shortboard participants by CAS participants of human, wind and fuel powered activities indicate that interactions between these types of activities are not compatible, although for the wave powered participant, wave related activities are the most compatible to all CAS.

**6.1.4    CAS General Population Tolerance Levels for Longboard**

Table 6.14 shows that wave powered participants have a statistically significant higher tolerance of the longboard beginner (App. 4; *t* test.  $p=0.026$ ), intermediate (App. 4; *t* test.  $p=0.006$ ) and experienced (App. 4; *t* test.  $p=0.001$ ) than human powered participants.

Table 6.15 shows that wave powered participants have a statistically significant higher tolerance of the longboard beginner (App. 4; *t* test.  $p=0.051$ ), intermediate (App. 4; *t* test.  $p=.001$ ) and experienced (App. 4; *t* test.  $p=0.001$ ) than of wind powered participants.

These results suggest that those who take part in human and wind related CAS activities would prefer not to interact with longboard participants that are of beginner ability and therefore the beginner longboard participant should be separated from human and wind related CAS activities.



Table 6.16 shows *t* test average scores for all the categories and reveals that the beginner longboard participant is the least desirable of all four of the power source categories. Human and fuel related participants show a very low tolerance to the longboard activity altogether. Wave related activities have the most tolerance overall to the Longboard, especially those that are experienced, whilst wind powered activities show a greater tolerance to the longboard than CAS human or fuel powered activities.

<i>Longboard</i>	<i>Human</i>	<i>Wave</i>	<i>Wind</i>	<i>Fuel</i>
<b>Beginner</b>	0.372	1.105	1.532	0.000
<b>Intermediate</b>	0.720	2.235	1.636	0.150
<b>Experienced</b>	1.232	4.047	2.207	1.900

Table 6.16      Total Mean Tolerance Levels for CAS Longboard Participants

The very low/negative tolerance levels of beginner and intermediate longboard participants by CAS participants of human, wind and fuel powered activities indicate these types of activities are not compatible, but that wave related activities are the most compatible.

**6.1.5    CAS General Population Tolerance Levels for Windsurfboard**

Table 6.17 shows that wind powered participants have a statistically significant higher tolerance of the windsurf beginner (App. 4; *t* test.  $p=0.007$ ), intermediate (App. 4; *t* test.  $p=0.001$ ) and experienced (App. 4; *t* test.  $p=0.001$ ) than human powered participants.

Table 6.18 shows that wind powered participants have a statistically significant higher tolerance of the windsurf beginner (App. 4; *t* test.  $p=0.001$ ), intermediate (App. 4; *t* test.  $p=0.001$ ) and experienced (App. 4; *t* test.  $p=0.001$ ) than wave powered participants.

Table 6.19 shows that wind powered participants have a statistically significant higher tolerance of the windsurf beginner (App. 4; *t* test.  $p=0.001$ ) and intermediate (App. 4; *t* test.  $p=0.001$ ) than fuel powered participants.

These results suggest that CAS participants who take part in human and wave related activities would prefer not to interact with windsurf participants at any level of ability. Therefore windsurf participants should be separated from those CAS activities that function using these power sources. Those participants that take part in fuel related activities would prefer not to interact with windsurf participants from beginner or intermediate ability. Therefore windsurf participants that are from these levels of ability should be separated from CAS participants of fuel related activities.

Table 6.20 shows the *t* test average scores for all the categories and reveals that beginner windsurf participants are seen as the least desirable of all by the four power source categories and entirely undesirable to participants from wave and fuel related activities. Human and wave related participants show a very low tolerance to the CAS windsurfing activity altogether. The fuel power source participants show the greatest tolerance overall especially to experienced windsurfers. Wind related activities have the most tolerance overall of windsurfers, especially intermediate or experienced participants.

<i>Windsurf</i>	Human	Wave	Wind	Fuel
<b>Beginner</b>	0.209	0.000	0.918	0.000
<b>Intermediate</b>	0.348	0.282	2.082	0.450
<b>Experienced</b>	0.790	0.447	3.147	1.950

Table 6.20     Total Mean Tolerance Levels for CAS Windsurfboard Participants

The very low/negative tolerance of beginner and intermediate windsurfers by participants in human and wave powered activity show that interactions between these ability types and activities are incompatible. And, the very low/negative tolerance of beginner and intermediate windsurfers by fuel powered participants indicate that interactions between these activities in some cases are also compatible. Wind related activities are the most compatible with windsurf activity.

#### **6.1.6 CAS General Population Tolerance Levels for Sailboat**

Table 6.21 shows that wind powered participants have a statistically significant higher tolerance of the sailboat beginner (App. 4; *t* test.  $p=0.019$ ), intermediate (App. 4; *t* test.  $p=0.001$ ) and experienced (App. 4; *t* test.  $p=0.001$ ) than human powered participants.

Table 6.22 shows that fuel powered participants have a statistically significant higher tolerance of the sailboat experienced participant (App. 4; *t* test.  $p=0.028$ ) than human powered participants.

Table 6.23 shows that wind powered participants have a statistically significant higher tolerance of the sailboat beginner (App. 4; *t* test.  $p=0.006$ ), intermediate (App. 4; *t* test.  $p=0.001$ ) and experienced (App. 4; *t* test.  $p=0.001$ ) than wave powered participants.

Table 6.24 shows that fuel powered participants have a statistically significant higher tolerance to the sailboat experienced participant (App. 4; *t* test.  $p=0.010$ ) than wave powered participants.

These results suggest that CAS participants who take part in human and wave related activities would prefer not to interact with sailboat participants from any level of ability

and therefore sailboat participants should be separated from human or wave powered activities.

Table 6.25 shows the *t* test average scores for all the categories and this confirms that beginner sailboat participants are the least desirable to all four power source categories and entirely undesirable to participants from wave and fuel related activities. Human and wave related participants show a very low tolerance of the CAS sailboat activity altogether. The fuel power source participants show the greatest tolerance of the experienced sailboat participant. Wind related activities have the most tolerance of sailboat participants especially those of an intermediate or experienced ability.

<i>Sailboat</i>	<b>Human</b>	<b>Wave</b>	<b>Wind</b>	<b>Fuel</b>
<b>Beginner</b>	0.000	0.000	0.557	0.000
<b>Intermediate</b>	0.162	0.000	1.016	0.200
<b>Experienced</b>	0.279	0.152	1.475	1.000

Table 6.25     Total Mean Tolerance Levels for CAS Sailboat Participants

The very low/negative tolerance of various ability levels of sailboat participants by CAS participants of human and wave powered activities indicate that interactions between these types of activities in conjunction with identified ability levels are not compatible. Additionally the very low/negative tolerance of beginner and intermediate ability level sailboat participants by the CAS participants of fuel powered activities indicates that interactions between these types of activities in conjunction with ability levels are also not compatible. Wind related activities are the most compatible with sailboat activity.

**6.1.7   CAS General Population Tolerance Levels of Jet-ski/Personal Watercraft**

Table 6.26 shows that fuel powered participants have a statistically significant higher tolerance of the PWC experienced participant (App. 4; *t* test.  $p=0.011$ ) than human powered participants.

Table 6.27 shows that fuel powered participants have a statistically significant higher tolerance of PWC experienced participants (App. 4; *t* test.  $p=0.015$ ) than wind-powered participants

These results suggest that CAS fuel powered participants have the most tolerance for Jet-ski/ PWC experienced participants.

Table 6.28 shows the *t* test average scores for all the categories and reveals that beginner PWC participants are perceived as being totally undesirable by participants of human wave and fuel activities. Intermediate PWC participants are also totally undesirable. Wind powered activities have the most tolerance of the PWC although this still very low. Fuel power CAS activities have the most tolerance of the activity overall although this is restricted to the intermediate and experienced PWC participant.

<i>PWC</i>	Human	Wave	Wind	Fuel
<b>Beginner</b>	0.000	0.000	0.196	0.000
<b>Intermediate</b>	0.000	0.000	0.262	0.600
<b>Experienced</b>	0.279	0.400	0.327	1.550

Table 6.28     Total Mean Tolerance Levels for CAS Jet-ski (PWC) Participants

The negative tolerance of the beginner and intermediate ability levels of PWC participants by CAS participants of human and wave powered activities indicates that interactions between these types of activities are not compatible. The negative tolerance

levels by beginner PWC participant to beginner participants of fuel powered activities also indicate that interactions between these levels and these types of activities are also not compatible. Experienced fuel related activities are the most compatible with the CAS PWC activity.

**6.1.8 CAS General Population Tolerance Levels for Powerboat**

Table 6.29 shows that wind powered participants have a statistically significant higher tolerance of the powerboat beginner (App. 4; *t* test.  $p=0.018$ ), intermediate (App. 4; *t* test.  $p=0.027$ ) and experienced (App. 4; *t* test.  $p=0.004$ ) than wave powered participants.

Table 6.30 shows that fuel powered participants have a statistically significant higher tolerance of the powerboat experienced participant (App. 4; *t* test.  $p=0.025$ ) than do wave powered participants.

Table 6.31 shows that wind powered participants have a statistically significant higher tolerance to the powerboat beginner participant (App. 4; *t* test.  $p=0.018$ ) than fuel powered participants.

These results suggest that CAS fuel and wind powered participants have the most tolerance of powerboat activities. Therefore powerboat participants should be separated from human and wave powered activities.

Tables 6.32 shows the *t* test average scores for all the categories and confirms that participants of all powerboat abilities are perceived as being totally undesirable by the participants of wave powered activities. Co-location with beginner and intermediate ability participants of powerboat activities is also completely undesirable for CAS human powered participants. Beginner ability powerboat participants are also perceived as undesirable by fuel powered participants. Wind powered activities show the most

tolerance of powerboat activities although this is minimal. The experienced powerboat participant is the most tolerated by participants of fuel power activities.

<i>Powerboat</i>	<b>Human</b>	<b>Wave</b>	<b>Wind</b>	<b>Fuel</b>
<b>Beginner</b>	0.000	0.000	0.114	0.000
<b>Intermediate</b>	0.000	0.000	0.245	0.250
<b>Experienced</b>	0.209	0.000	0.475	1.350

Table 6.32      Total Mean Tolerance Levels for CAS Powerboat Participants

Negative tolerance of powerboat participants by beginner and intermediate (inclusive of experienced for wave powered) ability participants in human and wave powered activities indicate that interactions between these types of activities are not compatible. The negative tolerance of beginner powerboat participants by fuel powered activities indicate that interactions between these types of ability and activities are also not compatible. Experienced fuel related activities are the most compatible with CAS powerboat activity.

**6.1.9    CAS General Population Tolerance Levels for Sub-Aqua**

Table 6.33 shows that human powered participants have a statistically significant higher tolerance of the sub aqua beginner (App. 4; *t* test.  $p=0.011$ ) and intermediate (App. 4; *t* test.  $p=0.006$ ) than wave powered participants.

Table 6.34 shows that human powered participants have a statistically significant higher tolerance of the sub-aqua beginner (App. 4; *t* test.  $p=0.001$ ), intermediate (App. 4; *t* test.  $p=0.001$ ) and experienced (App. 4; *t* test.  $p=0.001$ ) than wind powered participants.

Table 6.35 shows that human powered participants have a statistically significant higher tolerance to the sub-aqua beginner (App. 4; *t* test.  $p=0.001$ ), intermediate (App. 4; *t* test.  $p=0.001$ ) and experienced (App. 4; *t* test.  $p=0.003$ ) than fuel powered participants.

Table 6.36 shows that wind powered participants have a statistically significant higher tolerance of the sub-aqua beginner (App. 4; *t* test.  $p=0.038$ ) and intermediate (App. 4; *t* test.  $p=0.040$ ) than fuel powered participants.

These results suggest that CAS human powered participants have the most tolerance of sub-aqua participants, in particular a very high tolerance of experienced sub-aqua participants. Therefore beginner and intermediate sub-aqua participants should be separated from wave, wind and fuel powered activities.

Table 6.37 shows the *t* test average scores for all the categories and shows that beginner participants of sub-aqua are perceived as completely undesirable by participants of fuel powered activities. Beginner and intermediate ability participants of sub-aqua activities are also undesirable to CAS wind, wave and fuel powered participants. Human powered activities show the most tolerance to sub aqua activities. Participants of wave power activities show some toleration of the experienced sub aqua participant.

<i>Sub-Aqua</i>	Human	Wave	Wind	Fuel
<b>Beginner</b>	2.00	0.517	0.245	0.000
<b>Intermediate</b>	3.25	0.964	0.245	0.250
<b>Experienced</b>	5.37	2.929	0.475	0.950

Table 6.37      Total Mean Tolerance Levels for CAS Sub-Aqua Participants

The low/negative tolerance of beginner and intermediate sub-aqua participants by participants of wave, wind and fuel powered activities indicate that interactions between



these activities are not compatible. The negative tolerance of the beginner PWC participant by fuel powered activities also indicates that interactions between these types of ability and activities are not compatible. Sub-aqua participants and human powered CAS activities are the most compatible.

#### **6.1.10 CAS General Population Tolerance Levels for Sea-Angler**

Table 6.38 shows that human powered participants have a statistically significant higher tolerance to the sea-angler intermediate (App. 4;  $t$  test.  $p=0.030$ ) and experienced (App. 4;  $t$  test.  $p=0.011$ ) than wave powered participants.

Table 6.39 shows that human powered participants have a statistically significant higher tolerance of the sea-angler intermediate (App. 4;  $t$  test.  $p=0.048$ ) and experienced (App. 4;  $t$  test.  $p=0.008$ ) than wind powered participants.

Table 6.40 shows that human powered participants have a statistically significant higher tolerance of the sea-angler intermediate (App. 4;  $t$  test.  $p=0.022$ ) than fuel powered participants. These results suggest that human related activities are more tolerant of the beginner and intermediate sea angler than wave, wind and fuel powered activities, therefore beginner and intermediate sea anglers should be separated from these types of CAS activities.

Tables 6.41 shows the  $t$  test average scores for all the categories and confirms that beginner sea-angler participants were the least tolerated by the four power source categories, in particular wave-powered activities. Human powered activities were most tolerant of sea-angler activities and experienced sea-anglers most tolerated by all the categories, in particular by the human and fuel powered activities.

<i>Sea-Angler</i>	Human	Wave	Wind	Fuel
<b>Beginner</b>	0.907	0.176	0.475	0.250
<b>Intermediate</b>	2.000	0.294	0.508	0.250
<b>Experienced</b>	2.953	0.541	0.623	1.700

Table 6.41      Total Mean Tolerance Levels for CAS Sea-Angler Participants

The low/negative tolerance of all levels of ability of sea anglers by participants of wave, wind powered activities indicate that interactions between these types of activities are not compatible. The low tolerance of beginner and intermediate sea anglers by fuel powered activities indicate that interactions between these types of ability and activities are also not compatible. Sea angler participants and human powered CAS activities are the most compatible.

**6.1.11 CAS General Population Tolerance Levels for Canoe**

The statistical tests with reference to CAS canoe participants did not produce acceptable results that achieved the 0.05 significance level (95% confidence level) therefore the tests did not show the presence of significant statistical relationships. This may require further examination. However the *t* tests do provide data for the assessment of the total mean tolerance levels for canoe participants. Table 6.42 shows the *t* test average scores for all the categories and show that beginner canoe participants were the least tolerated by the four categories. Human and wind powered activities were most tolerant of the canoe participants and experienced canoe participants most tolerated by all categories.

<i>Canoe</i>	Human	Wave	Wind	Fuel
<b>Beginner</b>	0.674	0.352	0.590	0.200
<b>Intermediate</b>	1.000	0.705	1.229	0.750
<b>Experienced</b>	1.279	1.094	1.737	2.000

Table 6.42      Total Mean Tolerance Levels for CAS Canoe Participants

The low tolerance of the beginner levels of ability of canoe participants by CAS participants of human, wave, wind and fuel powered activities indicates that interactions between these types of activities are not compatible. The low tolerance of the beginner and intermediate canoe participants by wave and fuel powered activities indicate that interactions between these types of ability and activities are also not compatible. The experienced canoe participant is the most compatible with all alternative activities.

#### **6.1.12 Discussion**

The results above (6.2.1-6.2.11) show that many CAS activities are perceived by participants as incompatible when sharing the same water space. It is clear that the 'power source category' provided a very useful tool for the data analysis and this is linked to its ability to reflect the fact that the achievable water speed attained by different CAS craft does effect CAS participants' perceptions of risk. For instance, those who take part in sub-aqua activities were far more likely to find other 'human' activities such as swimming as a compatible activity, participants of wind activities preferred to share water space with other wind activities and parallel preferences were shown by those who take part in fuel powered activities.

However one important factor has been revealed by the compatibility data and this relates to the different respondent perceptions of levels of CAS participant ability. It is obvious from the results that the 'beginners' in any CAS activity were the least desirable participants to share water space with. All the ability categories agreed beginners increased their perceptions of risk when interacting in the same water space. This point is interesting because it is obvious that all CAS participants developed from beginners and it suggests that intermediate and experienced participants recall their own personal actions when at this stage and have a retrospective awareness that they unknowingly caused

hazardous interactions. It is evident therefore that coastal managers will need to prioritise ability issues.

## **6.2 Compatibility Matrices**

From the questionnaire results, the mean scores summarising the average number of other users which respondents considered tolerable have been incorporated into a model in the form of compatibility matrices to achieve the one of the aims of this study. These matrices will provide coastal managers with a tool from which an assessment can be made of the CAS carrying capacity that is attached to a CAS location.

Such knowledge will assist coastal managers and NGB to assess the 'ideal' CAS participant loading attached to a location. It will also assist coastal managers to develop a unique CAS location specific management plan. The implementation of this will assist coastal managers in making decisions relating to CAS coastal loading, health and safety, and the optimisation of resources.

There are four matrices and the numbers that are attached to the compatibility ideals are controlled by way of the available water space (i.e. a football pitch size). The first three matrices are determined by the different abilities (beginner, intermediate, experienced) of the participants. For instance Matrix One (Table 6.43) shows the compatibility ideals from the perception of a beginner. However, Matrix Four (Table 6.44) is different in that it is a maximum view with accumulated totals of all the different abilities. These matrices provide a simple yet sophisticated tool for a coastal manager..

Applying the matrices to a CAS location is relatively straightforward. For instance, Matrix One (beginner) Swimmer = 3 (under the heading of Human). This shows that

swimmers in general would prefer to limit the sharing of their water space to only 3 beginners from human powered activities (sub-aqua or other swimmers). In contrast, shortboarders in general (Matrix Three) would prefer to limit the sharing of their water space to 2 experienced participants from human powered activities (or) five experienced participants from wave powered activities (or) 1 experienced wind powered activity (or) 2 experienced fuel-powered activities. It is very clear from Matrices One, Two and Three that the levels of perceived ability affect the respondents' perceptions of levels of compatibility. For instance, beginners in any one case are perceived not to integrate very effectively with other activities whilst the experienced are perceived to be more adaptable.

**Matrix One**

<b>Beginner</b>	<b>Human</b>	<b>Wave</b>	<b>Wind</b>	<b>Fuel</b>
Swimmer	3	1	0	0
Body board	1	2	0	0
Short board	0	1	0	0
Long board	0	1	2	0
Windsurf board	0	0	1	0
Sailboat	0	0	1	0
Canoe	1	0	1	0
PWC	0	0	0	0
Powerboat	0	0	0	0
Sub-Aqua	2	1	0	0

**Table 6.43    Matrix One: Classification of CAS Participants’ Perceived Number of Beginner Alternative CAS Participants Desirable in a Football Pitch Sized Water Area**

### Matrix Two

<b>Intermediate</b>	<b>Human</b>	<b>Wave</b>	<b>Wind</b>	<b>Fuel</b>
Swimmer	5	3	1	0
Body board	2	4	0	0
Short board	1	3	0	0
Long board	1	3	2	0
Windsurf board	0	0	2	0
Sailboat	0	0	2	0
Canoe	1	1	1	1
PWC	0	0	0	1
Powerboat	0	0	0	0
Sub-Aqua	0	0	0	1

**Table 6.44     Matrix Two: Classification of CAS Participants' Perceived Number of Intermediate Alternative CAS Participants Desirable in a Football Pitch Sized Water Area**

### Matrix Three

<b>Experienced</b>	<b>Human</b>	<b>Wave</b>	<b>Wind</b>	<b>Fuel</b>
Swimmer	7	5	1	1
Body board	3	6	1	1
Short board	2	5	1	2
Long board	1	4	2	2
Windsurf board	1	0	3	2
Sailboat	0	0	1	1
Canoe	1	1	2	2
PWC	0	0	0	2
Powerboat	0	0	0	1
Sub-Aqua	5	3	0	1

**Table 6.45     Matrix Three: Classification of CAS Participants' Perceived Number of Experienced Alternative CAS Participants Desirable in a Football Pitch Sized Water Area**

Matrices One, Two and Three show the ideal numbers of alternative CAS participants from different abilities compatible in a water space. It is however likely that in non-zoned locations all three ability types will be present and this will complicate an assessment procedure. Hence it is important that a coastal manager will be able to assess when a CAS site has reached saturation. Therefore an amalgamation of the above categories will provide a benchmark for this assessment by developing the indicator for maximum loading.

**Matrix Four**

<b>Maximum</b>	<b>Human</b>	<b>Wave</b>	<b>Wind</b>	<b>Fuel</b>
<b>Swimmer</b>	<b>14</b>	<b>9</b>	<b>3</b>	<b>2</b>
<b>Body board</b>	<b>6</b>	<b>12</b>	<b>3</b>	<b>1</b>
<b>Short board</b>	<b>4</b>	<b>9</b>	<b>2</b>	<b>3</b>
<b>Long board</b>	<b>2</b>	<b>7</b>	<b>5</b>	<b>2</b>
<b>Windsurf board</b>	<b>1</b>	<b>1</b>	<b>6</b>	<b>2</b>
<b>Sailboat</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>1</b>
<b>Canoe</b>	<b>3</b>	<b>2</b>	<b>4</b>	<b>3</b>
<b>PWC</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>2</b>
<b>Powerboat</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>
<b>Sub-Aqua</b>	<b>11</b>	<b>4</b>	<b>1</b>	<b>1</b>

**Table 6.46      Matrix Four: All CAS Participants' Perceived Number of all Grades of Alternative CAS Participants Desirable in a Football Pitch Sized Water Area**

Matrix Four allows a coastal manager to identify (from the point of an individual participant’s perception of risk and quality of experience) a CAS site that is congested, has reached saturation level and requires intervention at management level to reduce the emergence of conflict and real risk. For instance, the allocation of surf

lifeguards/lifeboats will decrease CAS participants' perception of risk and increase their quality of experience, because the CAS participants will be aware that their activities are being monitored by a professional third party. It is clear from Table 6.46 that sailboat, powerboat and PWC participants do not wish to share their water space with any participant from human or wave powered activities, this clearly indicates to coastal managers that these activities must be separated. It is interesting that swimmers, bodyboarders, shortboarders and longboarders perceive that there space is compatible with between 1-3 fuel powered craft and or 1-5 wind powered craft this suggests that these participants are potentially unaware of the risks to themselves by interacting with these craft types. However, these participants may also be projecting their personal 'safety' considerations in that the compatibility of these craft types has been assimilated into the water space for 'rescue' purposes. Hence, coastal managers may use this information to allocate high powered rescue resources without heightening the CAS participants' perception of risk.

The information offered by this study indicates that LA and other coastal managers need to use a social and physical carrying capacity management system to assess the sustainability of a CAS site. The short summary below (6.4) is designed to restate the significant relationships and issues that have been identified by the compatibility assessment matrices discussed above.

## **6.3 Summary**

### **6.3.1 Human Powered Activities**

It is clear from the matrices that participants from sailboat, powerboat and PWC consider their activity to be incompatible with any human activity from any ability range. This emphasises to coastal managers that for sustainable CAS management these types of activities must be separated. Shortboard, longboard, and windsurfboard participants all



noted that beginners from human activities are incompatible with their water space. Participants from bodyboard and canoe indicate that one beginner from a human power source would be compatible in their water space.

Swimmer and sub-aqua participants indicate that they could share their water space with three and two (respectively) beginner human activities, which emphasises how similar powered activities are identified by respondents from different CAS to have differing conflict potentials. These human activity compatibility numbers rise with the ability level of the partaking individuals. Thus swimmers suggested that seven experienced human activities were compatible in their water-space whilst sub-aqua participants perceived this number to be five. What is interesting is that swimmers noted five intermediate human activities to be compatible in their water space, yet sub-aqua participants did not choose to share their water space with intermediate human activities at all. This may require further research as to why. Bodyboarders considered that two intermediate human activities are compatible in their water space and this number increased to three if the human powered CAS participants were experienced. Shortboard CAS participants perceptions are similar to those of the bodyboarder in that shortboarders indicate that one intermediate and two experienced human activities are compatible with their activity in their water space. However, longboard participant opinions differ from the other wave powered craft participants, in that only one intermediate or experienced human activity participant was noted by the longboarders to be compatible in their water space. Reflecting back to Section 2.5.5.1 it was pointed out by Conway (1999) that the length and width of the longboard has both positive and negative attributes in that it assists with overall flotation and craft stability, but causes for the participant difficulty in the access of surf zone because participants can get washed a long way backwards. It would be reasonable therefore to make an assumption that longboarders would prefer not to share

space with persons that may not be aware that longboards can become ‘loose cannons’ in the surf zone.

A generic strand of reasoning that may permeate the data used to compile matrices is that respondent selection of low compatibility numbers may have something to do with the range of vision of the CAS participant. This could be considered as a participant ‘activity observable’ especially with regard other crafts’ attainable speeds. For instance, human activities are noted to be the slowest of all CAS activities and therefore the most uncomplicated from a powerboat participant’s perspective to ‘keep an eye on’. Responses made by CAS participants during the pilot study indicated that the wave activity in the surf zone created a visibility barrier to CAS participants of craft approaching from deeper water and this created navigation problems with pilots needing to change course rapidly to avoid collisions.

Windsurfboard participants perceived that only one experienced human powered activity could function in the same water-space as a windsurfer, and this observation may be based on the same ‘activity observable’ line of reasoning.

### **6.3.2 Wave Powered Activities**

Participants from sail craft, windsurfboard, powerboat and PWC activities do not perceive their water-space to be compatible with any wave related activity from any level of ability. This is important because windsurfboards often use the coastal fringe and the waves for specific activities. This further emphasises to coastal managers that for sustainable CAS management these types of CAS activities must be separate. Participants from canoe activities perceive that their waterspace is compatible with one intermediate or experienced participant from a wave powered activity, but that a beginner from a wave powered activity is incompatible. This supports the discussions of Chapter Two (Section 2.5.7) where Foster (1997) notes that in some cases the shape of a kayak

can result in low stability and this will be 'less forgiving for the beginner' and further suggested that kayak participants should not practise surf technique on a beach in places where other water users could be run down.

Sub-aqua participants perceive that their water space is compatible with one beginner or three-experienced wave powered participants but would prefer not to share water-space with intermediate wave powered participants. Swimmers perceive their water-space to be compatible with one beginner, three intermediate or five experienced wave powered activities. This is interesting because longboard, shortboard and bodyboard wave powered activities have a much lower perception (around 50%) of compatibility ideals with human activities. This may suggest that swimmers do not understand wave related activity dynamics and that this is one cause of conflict. Wave related activities have a much higher perception of compatibility with regard to each other; bodyboard participants perceive that two beginner, four intermediate or six experienced wave powered activities would be acceptable in their water-space. Shortboard participants perceived one beginner three intermediate or five-experienced wave powered participants are compatible in their water-space, and longboard participants perceived the same as shortboard participants except they preferred one less experienced.

### **6.3.3 Wind Powered Activities**

Participants from sub-aqua, powerboat, and PWC perceive that wind powered craft from any level of ability are incompatible with their activity. Therefore, coastal managers must separate these activities if unsustainable practices are to be avoided. Sailboat participants perceive that their waterspace is compatible with only one participant from any ability level of a wind related activity. Windsurfboard participants are less tolerant of beginners from wind powered activities (one acceptable), although this number increases with perceived level of ability i.e. intermediate two, experienced three. Bodyboard and

shortboard participants have similar perceptions of sharing water space with wind powered activities. Both bodyboarders and shortboarders perceived that wind powered participants from beginner and intermediate ability are incompatible with their activity and that only one experienced wind powered participant would be acceptable in their waterspace. However, longboard participants perceived that two wind powered participants from any ability would be acceptable in their waterspace. Swimmers perceive that one intermediate, or experienced wind powered craft is compatible with their waterspace. This is interesting because windsurfboard participants in particular also perceived a similar compatibility. However, because the number is very low one, the 'activity observable' line of reasoning may be evident. Canoe participants perceive compatibility with one beginner or intermediate or two experienced wind powered participants.

The issues discussed immediately above are important for coastal managers because they show that bodyboard, shortboard and longboard participants may be misguided in their perceptions of compatibility ideals. This is because wind power participants do not perceive that their activities are compatible with any wave activity. This is a cause for conflict.

#### **6.3.4 Fuel Powered Activities**

Respondents from all activities, inclusive of participants from powerboat and PWC activities, preferred not to share their waterspace with a beginner from a fuel powered activity. This is important because it clearly indicates to a coastal manager that for sustainable CAS management, beginners from fuel powered craft require separation zones in which to practice.

CAS participants from canoe and PWC activities perceive that one 'intermediate' participant from a fuel power craft was acceptable to share their water space. Also sub-aqua participants perceived this to be equally acceptable. However, this study acknowledges that during sub-aqua activities a fuel driven craft is used by participants for water access and safety procedures. Experienced participants from fuel powered activities are tolerated by respondents from all the different activities. Participants from shortboard, longboard, windsurfer, canoe, PWC all perceive that they could share their waterspace with two experienced participants from fuel powered activities. In addition, swimming, bodyboarding, sailing and powerboating participants were prepared to share their waterspace with one experienced fuel powered participant. However, there is a strong possibility that several of these participants may perceive that this 'fuel powered' sharing may be related to safety craft. This may be supported by the fact that powerboat participants perceive that their activity is totally incompatible with any other activity within the given waterspace, which differs greatly from the perceptions of participants from other activities. This is important because it shows coastal managers that participants from all ability levels of CAS activities are unaware of the waterspace required for alternative activities and this may be one cause of conflict.

Comparison of the matrices with observations at CAS locations suggests that participant numbers are exceeding the compatibility ideals and that as a consequence hostility will occur. However, if coastal managers use the matrices they should be able to determine if their site is becoming saturated and manage the site to ameliorate the situation. For example, the employment of lifeguards may well increase the compatibility numbers as will the provision of special beginner zones. However, this tool will not develop in a sustainable manner at all sites if the overarching management structure of CAS is not operating in a coherent and effective manner.

In Chapter Three a cascade of bodies, both governmental and non-governmental, are shown to have an interest in CAS. Chapter Five has also shown that some of the fundamental elements of the CAS management system are currently not effective. For instance, the majority of CAS respondents did not recognise any on site Government management structures and/or understand safety policies. In particular, the accessibility of CAS SCP is perceived by the majority of respondents to be ineffective. In addition, NGB and vehicles for SCP dissemination are also perceived by participants at grass root levels to be inadequate. Solving these fundamental problems is critical for the development of sustainable CAS management strategies.

These issues have developed to form the hypothesis:

**That organisational barriers exist within the arrangement of bodies that have an interest in CAS.**

In order that a CAS management system can develop effectively it was determined that an evaluation of the overarching governance structures of CAS should be undertaken (Chapter Seven). This evaluation examines the structure of the governance communications processes and explores the perceptions of officers of the individual organisations in relation to their own and others responsibilities to CAS. This data underpins the proposed CAS governance model (Chapter Eight) and the conclusions it represents. The evaluation (a 'stakeholder' consultation) is reported in Chapters Seven and Eight and clarifies the current position of CAS development in the UK.

## CHAPTER SEVEN: CAS GOVERNANCE

### 7.0 Introduction

Chapters Five and Six of this thesis analysed the year 2000 field work data; the results suggest that currently in Cornwall CAS saturation levels are being reached and often exceeded. In addition, the data also suggest, government management initiatives and structures are not functioning effectively.

For example, Chapter Three revealed that there is a complex cascade of bodies, both governmental and non-governmental, with an interest in CAS. The results from the year 2000 field work (Chapter Five) have also shown that some of the fundamental elements of the CAS management system are currently not effective. For instance, the majority of CAS respondents did not recognise any on-site government management structure, did not understand CAS related safety policies and perceived CAS Sport Codes of Practice (SCP) to be inaccessible and therefore ineffective. In addition, NGB and vehicles for SCP dissemination were also perceived by the CAS respondents to the year 2000 field work to be inadequate. These issues prompted the development of a hypothesis, which suggested:

**That organisational barriers exist within the arrangement of bodies that has an interest in CAS.**

Hence to resolve these fundamental problems it was necessary in the first instance to determine solutions to provide a mechanism for the development of sustainable CAS management strategies.

Prior to the development of an improved CAS management model organisational barriers must first be identified and examined. These barriers may exist within and between the bodies that have an interest in CAS. Therefore, this study has examined the underpinning management configuration of CAS in the expectation that this will assist in the development of a CAS organisational model. Any CAS management model will require an articulation of the responsibilities of central and local government and its agencies and the role of non-governmental organisations. This work determined that through an examination of the structure of the CAS management communication processes and by exploring the perceptions of officers that represent the individual organisations in relation to their own and others' responsibilities to CAS, an evaluation of the overarching management structures of CAS could be made. The data derived from this could then underpin the proposed CAS management model (Chapter Eight) and the conclusions it represents and thus, clarify the current position of CAS development in the UK.

### **7.1. Aim and Objectives of CAS Governance Field work**

The aim of the year 2002 stage of the study is linked to theme (ii) and was defined and developed in both Chapter One and Chapter Four

**Aim Two:** To develop an integrated management model that would identify and define a clear executive CAS organisational management structure. This executive organisation structure will underpin the development of individual CAS management models.

The hypothesis discussed in Section 6.3 and Section 7.0 suggests,

**That organisational barriers exist within the arrangement of bodies that has an interest in CAS.**



The information derived from the literature review, the 1998 pilot study, the 1999 LA data collection (see Section 4.4) also indicated that organisational barriers exist within the arrangement of bodies that has an interest in CAS. Four research objectives were defined in examining the organisation of the CAS management structure; these are also linked to the field work carried out in the year 2000 (see Chapter Four).

1. Identification of the marine and maritime coastal stakeholders that have an interest in CAS.
2. An assessment of the responsibilities of central government and their attached agencies, and external organisations.
3. An assessment of the awareness of marine stakeholders of current government management initiatives and structures.
4. An assessment of the awareness of marine stakeholders of the regulation, control mechanisms and facilities that currently govern coastal sports.

A qualitative semi-structured interview was used for this stage of the research and incorporated concerns identified by the year 2000 field work analysis. The interview sample included 'stakeholders' that were representative of each of the government or non-government organisations identified as being relevant to CAS.

#### **7.1.1 Stage Two: Objective One-Identification of the Marine and Maritime Coastal Stakeholders that have an Interest in CAS**

The following list identifies the selected personnel, the representative organisations, the location and date of the interview. The list is sorted alphabetically by name because during the transcript analysis this will assist the referencing.

<b>Name</b>	<b>Organisation</b>	<b>Interview Location</b>	<b>Date</b>
John Broad (Appendix 2.1)	Cornwall County Council & (RNLI)	Marcus Hill, Newquay	20.6.2002
Peter Braidley (Appendix 2.2)	Royal National Lifeboat Institute (RNLI)	West Quay Road, Poole, Dorset.	15.7.2002
Lorraine Brown (Appendix 2.3)	Sport England	Central House, Upper Woburn Place, London.	5.7.2002
Nicola Carnie (Appendix 2.4)	Department of the Environment Food and Rural Affairs (DEFRA)	ODPM, Ashdown House, Victoria Street, London.	16.7.2002
Robin Rafeal (Appendix 2.5)	Maritime Coastguard Agency (MCA)	Manchester.	23.7.2002
David Reid (Appendix 2.6)	British Surfing Association (BSA)	Champions Yard Penzance. Cornwall	22.6.2002
Sue Tolland (Appendix 2.7)	Department of the Environment Food and Rural Affairs (DEFRA)	Temple Quay House, Bristol	24.7.2002
Fiona Wood (Appendix 2.8)	Department of Culture, Media and Sport (DCMS)	Coxspur Street, London.	16.7.2002
Jerry Urdley (Appendix 2.9)	Royal Yachting Association (RYA) <i>Telephone interview</i>	Telephone Interview	25.7.2002

Table 7.1 The 2002 Stakeholders and their Affiliations

Table 7.1 gives the appendix numbers for transcripts of the interview while explicit reference in the text identifies the paragraph number and the statement number. For example, Robin Rafeal (MCA) followed by (*para*, 2:-12,13,14) shows that the information is provided by Robin Rafeal. This is shown by Table 7.1 to be available in Appendix 2.5 and the statement containing the information is paragraph 2, (*para*, 2) records labelled 12, 13 and 14.

Because of the qualitative nature of the interviews, it was decided that a personal recorder would be the best device to collect the data. Ethical procedures were followed strictly in relation to this. Also, because of audio difficulties during the single telephone interview, notes were made continually and written up immediately at the closure of interview. The

significant factors affecting CAS participation (discussed in Chapter Six) were used to create and direct the types of questions and probes for the year 2002 stakeholder qualitative interviews.

## **7.2 Stage Two: Objective Two-The Responsibilities of Central Government, their Attached Agencies, and External Organisations**

### **7.2.1 The Office of the Deputy Prime Minister (ODPM) and the Regional Co-ordination Unit (RCU) and Government Office Network**

The office of the Deputy Prime Minister (ODPM) houses the Regional Co-ordination Unit (RCU) and Government Office (GO) network. The RCU mechanism is perceived to 'cut through bureaucracy' and provide a high profile regional network (made up of nine government offices) for the delivery of Central Government services and programmes. These are perceived to promote the improved delivery of services that have crosscutting outcomes and affect local people at grass roots level. At the time of the interviews the Integrated Coastal Zone Management Section of DEFRA was housed in the ODPM.

The three government offices that currently support central government links to CAS are the Department of the Environment, Food and Rural Affairs (DEFRA), the Department for Transport (DfT) and the Department of Culture, Media and Sport (DCMS) (Figure 7.1). These departments allow for the dissemination of government policy and provide the mechanisms for action.

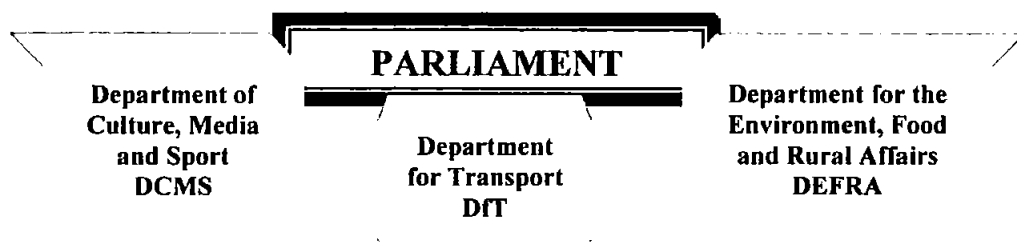


Figure 7.1 The Three CAS Related Departments of Central Government

There are two sub-divisions of DEFRA which have relevance to the current study. One is based in the Department of the Deputy Prime Minister, London. Nicola Carnie (DEFRA) emphasised that this newly formed (approximately 1 year at the time of interview) ICZM division of DEFRA was intended to provide a strategy for the implementation of ICZM in the UK (*para*, 2:-9,10). This is important because ICZM encompasses approaches that may produce sustainable solutions for many coastal problems (Chapter Three). The interview with the officer (Sue Tolland) at the DEFRA Environmental Division based at Temple Quay House Bristol provided a different perspective because it provides the CAS ‘Bylaw’ regulatory powers.

The interviews suggest that responsibility for CAS by the three departments of central government is not a central ‘priority’ task. For instance Sue Tolland (DEFRA) noted that, due to the foot and mouth crisis, the 59 recommendations for actions relating to coastal Bylaws (discussed in Chapter Three) had become stalled for some three and a half years (*para*, 5:- 33,34).

Furthermore, little knowledge about the pertinent CAS issues discussed in this study resides in these central departments. Fiona Wood (DCMS) stated that her department’s responsibilities for CAS were ‘very arm’s length’ and that coastal matters are passed on to DCMS by other Government Departments, Parliament, National Governing Bodies (NGB) and occasionally by the public (*para*, 2:-6,7,8). Sue Tolland (DEFRA) noted that

the Department does not look at 'grass root' activities or get involved in the day-to-day management of the coast (*para, 7:- 51, 52*).

Officers from both DCMS and DEFRA indicate that there is an awareness of their Departments' specific responsibilities for water recreation. Fiona Wood (DCMS) noted that DCMS had a responsibility to look at, and work on, water recreation policy with other government departments, NGB and Sport England (SE) (*para, 2:-11*).

Chapters Two and Three show that in situ management control mechanisms, in conjunction with government policies, are vital to the sustainable development of CAS. However, the work here indicates that the management of CAS is not a core priority of central government and this point is supported by the conclusions drawn from the year 2000 field work (Section 5.8) which showed that the majority of CAS participants have no knowledge of the existence of government policies and associated structures. This emphasizes the fact that poor CAS practices are developing and that CAS is progressing in an unsustainable manner.

It is evident from the interviews that CAS grass root issues were not clear at central government level and this implies that communications from the bottom up are not functioning effectively. This will restrict the overall development of a sustainable CAS management model because the three departments of central government provide the mechanism for CAS governance. *Therefore, this study concludes that expert knowledge of CAS management is not an organisational target in central government departments.*

Analysis of the 2002 stakeholder consultations shows a link between changes in government organisation and the 'passive' development of CAS management. This was emphasised by Sue Tolland (DEFRA) who noted that the Department of Transport (DoT)

(now known as DfT) used to have an interest in coastal Bylaw, as did the Home Office. Then this interest passed to the DETR, which then changed to the DTLR, which redivided to the DfT and DEFRA (*para, 1:-11,12,13*). In support of this observation, both Robin Rafeal (MCA) and Jerry Urdley (RYA) placed emphasis on the negative consequences associated with the structural adjustments of government departments. *Therefore, this study has concluded that the internal organisational and responsibility changes of government departments have created barriers that negatively affect the management of CAS.*

### 7.3 Mediators for CAS

The three departments of central government have communication links with each other and overall knowledge of CAS is increased via information exchanges between two specific government agencies. Fiona Wood (DCMS) identified Sport England (SE) as the primary focus for CAS (*para, 9:-3,9*). Sue Tolland (DEFRA) identified the Maritime and Coastguard Agency (MCA) in conjunction with SE as important factors in the communication processes (see Figure 7.2). Hence, these two agencies should influence the current CAS landscape significantly.

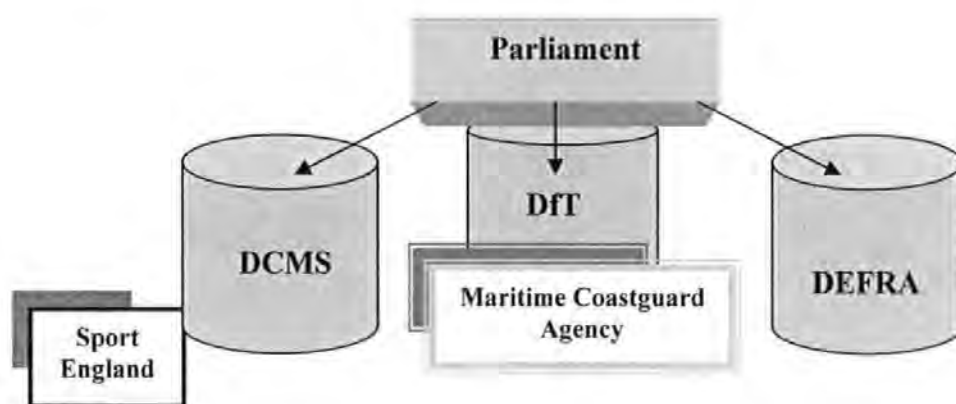


Figure 7.2 Government Agencies and their Specific Attachment to the CAS Key Departments of Central Government.

Figure 7.2 identifies Sport England (SE) and Maritime Coastguard Agency (MCA) as the two government agencies that act as CAS information mediators with the three departments of central government. It is therefore important that the communications between these agencies and the departments of central government are consistent because a common understanding of CAS issues is necessary to create good management practices. However, the interviews suggest that organisational barriers exist within departments of central government and government agencies and that CAS communication links between SE, the MCA and the three departments of central government are inconsistent. These barriers affect communication with CAS bodies and this hinders the development of good CAS management practices. The details of both agencies are discussed below.

### **7.3.1 Sport England**

Sport England (SE) aims to lead the development of sport in England by influencing and serving the public, commercial and voluntary sectors and by fostering a healthier, more successful nation through increased investment in sport and active recreation (Sport England, 2002).

SE is shown by Figure 7.2 to be the government agency that acts as an information mediator between DCMS and CAS. However, Lorraine Brown (SE) suggests that SE do not have a clear vision of their work with CAS (*para, 1: -3*) even though the primary role of SE is to provide support and guidance on all aspects of sport. A main function of SE noted by Brown (SE) is to source funding for sports through the Exchequer programme, which includes sport coaching and the development of pathways<sup>1</sup> looking at equal opportunities policies. Brown (SE) further suggests that SE provides a brokerage system by working with youth sports trusts to create links with other organisations (*para, 2:-*

7,8,9,10,11). Jerry Urdley (RYA) noted that SE had no core role in CAS management but was grant aided to produce international teams and that the influence of a competitive ideology clouded their approach to other sporting issues (*para, 19:- 64, 65*).

The interviews suggest that SE have poor CAS management related communication links and that many pertinent issues relating to the CAS landscape are not understood by the agency. This hypothesis is supported by Brown (SE) who stated that there should be fluent planning and policy communications so that when CAS issues develop SE would be able to empathise and overcome communications difficulties (*para, 6:-28,29,30*). *This study therefore concludes that poor CAS management related communications links will reduce SE effectiveness in the future development of CAS.*

### **7.3.2 Maritime and Coastguard Agency**

The MCA has a clear ambassadorial role for the DfT because it is the main artery of the government's commitment to marine traffic and therefore CAS. John Broad (LA & RNLI); Peter Braidley (RNLI); Sue Tolland (DEFRA) and Jerry Urdley (RYA) all identify the role of the MCA as a source of marine and maritime expertise. The interviews suggest that the MCA provides a rich information cache for all bodies involved with CAS. The MCA communication links range from grass root structures to central government and this is now further extended because ICZM is beginning to emerge as an underpinning rationale for the agency.

Robin Rafeal (MCA) emphasised that a 'cross pollination' between all CAS 'agents' is a priority for the development of MCA CAS related safety procedures. This concept of cross pollination is supported by John Broad (LA & RNLI) who also identified the MCA

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<sup>1</sup> Pathways: for women in male dominated sports and encouragement of people from different backgrounds to get involved in sport.



as the LA & RNLI main government point of contact (as well as the Royal Society for the Prevention of Accidents (RoSPA), NBSC<sup>2</sup>, NGB, rescue services and private bodies).

Robin Rafeal (MCA) stated that the MCA had a primary role to make sure vessels are safe and that the environment is protected with safer ships and cleaner seas (*para, 1:-1*). Rafeal stated that the MCA enforcement powers are underpinned by commercial activities, which generally fall under the jurisdiction of the International Maritime Organisation (IMO) (*para, 2: -9,10*). For instance, the MCA provides the enforcement powers for vessel seaworthiness and the statutory qualification requirements for the crew of commercial vessels (*para, 2:-10*). In contrast, the CAS related channel of the MCA concentrates on the coastguard responsibility under international and national law to provide a marine rescue service. This 'by-product' of the MCA's role serves to stimulate advisory work with LA, Activity Centres, Marinas and Harbour Masters (*para, 2:7,12*). Rafeal (MCA) emphasised that CAS did not directly come under any specific government legislation and because there is no jurisdiction (apart from Bylaws) 'a person can get into a rowboat or a bath tub and go across the Atlantic' (*para, 1:-5*).

The lack of specific government legislation for CAS has important implications for the development of a sustainable CAS management model. Participation in CAS has dramatically increased in the past decade, yet from the discussion above it appears that the DfT's commitment to CAS safety has derived solely from its obligations to international and national law. *This point is also supported by the results of the year 2000 field work (Chapter Five) in that the majority of CAS participants did not identify any central government CAS management policies or in situ management structure. Therefore, this study concludes that DfT CAS safety drivers are inert and are not proactively generated internally.*

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<sup>2</sup> NBSC: National Beach Safety Council composed of persons representative of Local Authorities.

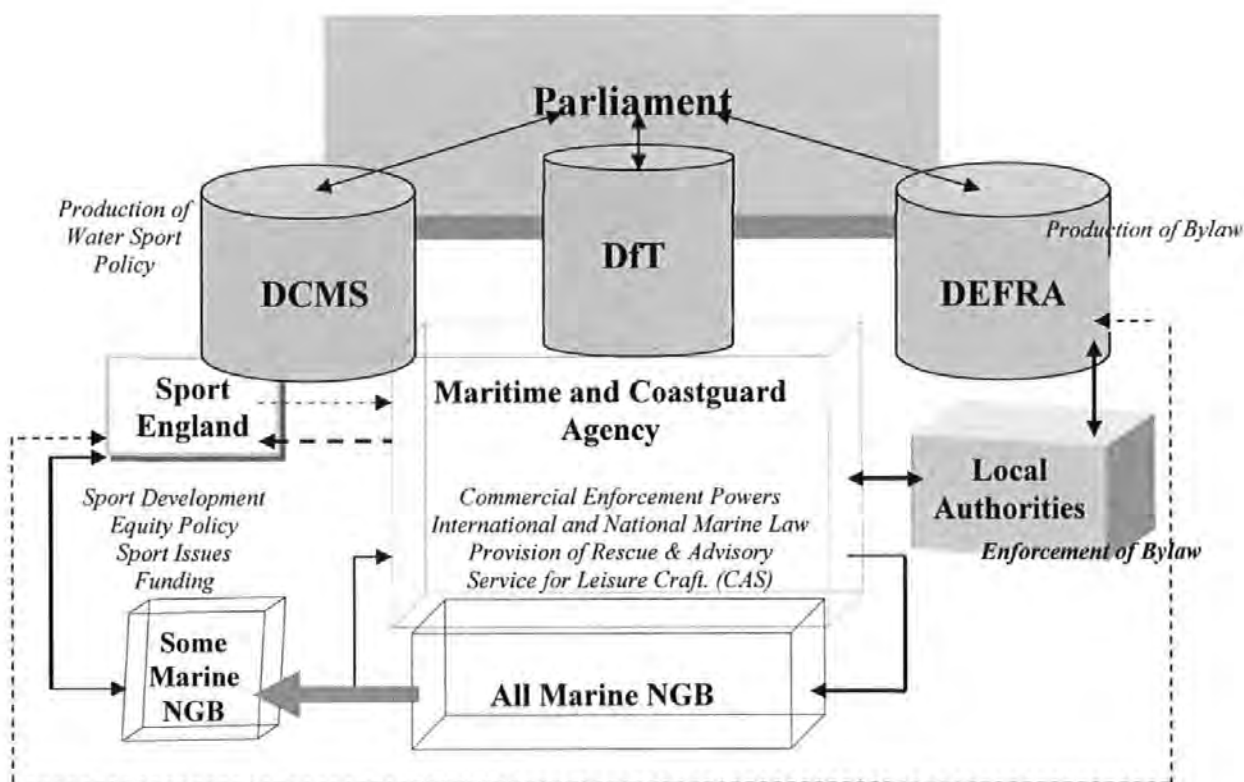


Figure 7.3 CAS Linked Organisational Communication Exchange

Figure 7.3 shows the strength of communication links by the thickness of lines. For instance, the broken line (link) indicates some but poor communication, the thick line (link) indicates strong communication. In addition to showing links between the departments of central government and government agencies, Figure 7.3 also includes the linkages associated with Local Authority (LA) and National Governing Bodies (NGB). This is explained further in the following section.

## 7.4 National Governing Bodies

The role of National Governing Bodies are fundamental to this study because Section 3.8.3 showed that the *Government Plan for Sport* (DCMS, 2001) stressed that during the year 2000 the Government had pledged (over three years) some £7 million funding for the devolution of greater responsibility to NGB. NGB are shown by this study (Section

2.5 and 3.8.4) as providing specialist training and safety expertise to CAS participants in individual activities. In this respect, it is important to note that the results of the year 2000 field work showed that 76% of the sample were not members of a NGB. Hence, the representative character of CAS NGB is in serious doubt.

#### **7.4.1 The Status of NGB**

The NGB are perceived by all stakeholders to play a critical role in the development of sustainable CAS. Jerry Urdley (RYA) and David Reid (BSA) clearly showed that each of the NGB contained a deep cache of sport specific knowledge. Fiona Wood (DCMS) stated that the DCMS would support NGB taking a bigger role in the management of CAS (*para, 9:-33*). Peter Braidley (RNLI) and Lorraine Brown (SE) noted that NGB could be the ideal vehicle for the dissemination of Sport Codes of Practice (SCP) and for raising awareness for educational schemes. The consensus of the 2002 stakeholders confirms that the individual NGB have played a positive role in the evolution of CAS and that they are important for the future development of CAS.

This study has frequently referred to the impact of NGB on the governance of CAS. The stakeholder consultations provide evidence for the view that a flaw exists in the overall development of the CAS NGB and this affects NGB ability to develop effectively. David Reid (BSA) perceived that the lack of consolidation of NGB by central government had contributed to an increase of unregistered 'surf schools' and that this concern is exacerbated by the lack of LA intervention (*para, 12:-62*). All stakeholders agree that CAS schools with inappropriately qualified instructors operating without any type of official governance will have unfavourable safety implications for CAS participants. For instance, DEFRA, MCA, SE and the RNLI, noted that several organisations exist that describe themselves as the governing body of a particular CAS. Peter Braidly (RNLI) stated that the effectiveness of Sport Codes of Practice (SCP) would be adversely affected

if disseminated through a system that includes NGB duplication (*para, 7:-34*). Sue Tolland (DEFRA) further pointed out that if two bodies were claiming authority over a CAS, then there would be a constant threat that the right information is not being disseminated. This point clearly links to the conclusions made from the results of the year 1998 and 2000 field work (Section 5.8) which showed that over 76% of the CAS participants who took part in the questionnaire were not members of their NGB. Additionally the results also revealed that a statistically significant majority of self-perceived 'experienced' and 'intermediate' respondents had no affiliation with an NGB and had received no formal instruction in their activity. Hence, there is a clear indication that CAS participant self-perceived ability is based on personal experience and information gleaned from informal sources. These types of communication exchanges are likely to produce and perpetuate unsustainable practices. This is important because 2000 field work concluded that there is a significant relationship between the respondents self perceived ability level and CAS participant encounters with hostility. Hence without intervention the 'disorder' associated with NGB duplication and the lack of central government consolidation will exacerbate this issue.

#### **7.4.2 NGB and Communication Links**

For an effective and sustainable CAS management system there must be clear communication links between all interested bodies including NGB. However this study has shown that NGB do not have clear communication links with the departments of central government and their agencies.

The stakeholder consultations show that of government agencies the MCA has the strongest overall commitment to all CAS NGB. Robin Rafeal (MCA) states that the MCA interacts and associates with all waterface activities (*para, 3:-13,14*). Sue Tolland (DEFRA) placed emphasis on SE and MCA for access to CAS related NGB information.

This is interesting because this study suggests that SE has little grass root association with CAS NGB and this further suggests that DEFRA is receiving limited information from SE which in turn may create indifference in their decision-making processes. This scenario is supported by David Reid (British Surfing Association) who stated that the BSA only hear about changes after they had happened and that the BSA would prefer to be proactive in government decision making processes (*para, 9:-50*). Lorraine Brown (SE) noted that SE joins with all NGB and sports agencies in the UK Sports Council (*para,3:-15,16*) and, thus, SE should be a strong communication link from NGB to central government. However, the link is shown by this study to be sporadic and inconsistent, which has implications for any CAS management model. This is because links of communication between all stakeholders must be fully integrated if the overall CAS landscape is to develop in an integrated and sustainable manner. Issues of funding have also been shown by this study to be related to NGB weaknesses.

#### **7.4.3 NGB and Funding Issues**

The stakeholder interviews show that the funding of NGB by government agencies is inconsistent. Lorraine Brown (SE) stated that SE do not fund all marine and maritime related NGB. For example, they offer no funding to British Sub Aqua Club (BSAC) (*para, 2:-12*). The British Surfing Association director, David Reid (BSA) also stated that the BSA receive no funding at all from any government body and are dependant on sponsorship (*para, 5:-19, 20, 21, 22*). In contrast to BSA and BSAC, the RYA is in receipt of a number of SE related funding initiatives, this would support the conclusion made in Section 5.7.1 in that CAS participants of wind powered activities were significantly more likely to be a member of a NGB than participants of wave, human or fuel powered activities. However, the stakeholder interviews show that the economic drivers associated with the commercial status of a NGB reduces their capability to provide CAS management with an unbiased interface. Peter Braidley (RNLI) and Rafael

(MCA) perceive that economic forces actively encourage competitiveness and jealousies between private NGB, thus restricting appropriately balanced decision-making. Therefore, if NGB are to become an effective participant tool in a CAS management system, then their private status could restrict their ability to perform objectively and effectively.

*Therefore, this study concludes that if there is a funding inconsistency, or if it is perceived that 'treatment preferences' by government agencies exist, this will foster the negative influences created through economic competition. This unbalanced approach to funding individual sport NGB by government agencies will restrict the development of CAS management.*

#### **7.4.4 The Effect of NGB Life Spans**

Section 7.4.3 indicated that there is a perceived inequality of funding by government agencies to NGB. However, from the analysis of the stakeholder interviews this study has concluded that one of the causes for this type of inequality may be associated with the life span of a NGB. Jerry Urdley (RYA) placed an emphasis on the 'age' of NGB, in that the RYA has been established as a NGB for some 167 years in contrast to other NGB which are still embryonic. Urdley suggested that this is a factor which has influenced the way that the RYA has developed good working links with DfT, DEFRA, MCA, RNLI, LA, Local Government Associations and others (*para, 2:-6,7*). This relative longevity of the RYA may certainly be significant for the development of NGB communication links. This is because wind power CAS participants (who are generally associated with the RYA) were noted by the year 2000 field work to have stronger NGB association than other CAS participants (see Chapter 5, Figure 5.11).

Hence, NGB at an 'embryonic' stage may require additional assistance from government agencies or elsewhere and if this occurs it could act to reduce perceived inequalities in funding and increase positive NGB communication channels.

#### **7.4.5 The Impact of Overlapping SE and UK Sport Responsibilities on NGB**

This study has shown that some stakeholders perceive NGB to operate in economically driven isolation in which they are dependent on membership for financial support. Also discussed are the different competencies of operational management that exist in the individual organisations. The stakeholder consultations show that the overlapping of responsibility of government agencies further complicates NGB operations, creates poor communication links and contributes to the creation of unhelpful relationships. Uncertainty does exist in the relationship between SE and the UK Sports Council. Lorraine Brown (SE) highlighted one difficult issue in that SE do not want to fund, or demand something from, an NGB when the UK Sports Council are also funding and demanding something quite different.

*Thus, communication complexities associated with overlapping SE and UK sport responsibilities for NGB hinder the development of NGB. This lack of clarity produces confusion and reduces the effectiveness of a CAS management system. Because of these issues this study concludes that a destabilisation factor and a barrier to the development of effective CAS management is the fact that NGB have not got government recognised official status. Therefore, without the provision of an NGB 'official status', CAS participants are at risk of associating with profit-driven, less able bodies. This factor will reduce or even reverse the positive development of the individual sources of CAS management such as Sport Codes of Practice. Hence the development of a sustainable CAS management model is heavily influenced by the by the lack of 'official status' of some NGB.*

## 7.5 Sport Codes of Practice (SCP)

The year 2000 field work showed that a large proportion of CAS participants perceived SCP to be effective management tools and also showed that a significant relationship existed between participants who encountered hostility and the inaccessibility of SCP. Therefore SCP are an important factor in the way that CAS is managed and developed.

### 7.5.1 Dissemination of SCP

The dissemination of SCP is critical to the development of CAS management plans because SCP indicate to users the ways that individual sports are carried out. SCP are identified by this study to be significant to CAS management because they have the flexibility to connect with casual users. There is common agreement by the stakeholders that, because specialist CAS expertise is associated with a particular NGB, individual SCP should be developed with relevant NGB participation. Jerry Urdley (RYA) stated that the general understanding from government is that the RYA assumes responsibility for wind and some fuel powered CAS, and this is regarded as part of the RYA constituency (*para, 7:-23*). Hence, the government perceive NGB (discussed in Chapter Three) to be a vehicle for the dissemination of SCP. But there are important aspects of NGB capacity which can limit overall effectiveness and a number of strands developed from the year 2002 interviews suggest that for effective SCP dissemination the NGB should only be one of many vehicles. One of the reasons for this is linked to the duplication of NGB organisations and was discussed earlier. John Broad (LA & RNLI); Lorraine Brown; (SE); Peter Braidley (RNLI); Nicola Carnie (DEFRA); Robin Rafeal (MCA); Sue Tolland (DEFRA) and Fiona Wood (DCMS) all suggest that because NGB are membership driven (commercial) the casual non-member CAS participant may be omitted from the dissemination loop. This suggestion is supported by the discrepancy between NGB membership and actual CAS participants.



The implications of NGB being identified as the ideal vehicle for SCP dissemination may also cause communication breaches in the ways that CAS participants gain correct information. Section 7.4 discussed a number of issues relevant to NGB, which influence perceptions of NGB viability as sole disseminators of SCP. It seems that, although there is support for the role of NGB in the production of individual sport SCP, there may well be limitations in their role. The importance of SCP to the CAS landscape is also emphasised by the conclusions made from the year 2000 field work (Section 5.8) the results revealed a significant relationship between the perceived accessibility of SCP and CAS participants' encounters with verbal and gesticular hostility; those who had encountered hostility were more likely to perceive SCP to be inaccessible. The lack of accessibility of SCP will hinder the sustainable development of CAS safety and management. Therefore, because NGB are identified as the ideal vehicle for SCP dissemination they should recognise that a lack of public access to SCP by CAS participants will cause unsustainable practices to develop.

Therefore this study concludes that the methods of SCP dissemination to CAS participants will require an independent examination because a statistically significant majority of CAS participants perceived that SCP are inaccessible and thus ineffective.

### **7.5.2 The Official Status of SCP**

Section 7.4.6 concluded that, without clear government official recognition of organisations that operate as the NGB of individual sports, the effectiveness of any NGB engaged in the development of CAS management is questionable. Nicola Carnie (DEFRA) pointed out that if SCP advancement results from a partnership approach between NGB and a department of government such as the DCMS this may provide a stamp of approval (*para, 6:-2*) from which to consolidate SCP. Fiona Wood (DCMS) who stated that the DCMS, working together with NGB, could provide an ideal

mechanism for the dissemination of SCP, confirmed support for this partnership (*para, 8:- 26*).

*This study therefore concludes that the attachment of official status to SCP is essential for their effectiveness in CAS management. In addition, organisational barriers exist when less able bodies claim NGB status and reduce the overall effectiveness of SCP by the production of conflicting information.*

### **7.5.3 The Effectiveness of SCP Casual Interpretation**

Interview discussions about the types of mechanisms available to disseminate SCP showed stakeholder consensus that marine and tourism industries (discussed in Section 2.8.1 and 2.9.4) could assist the delivery of the correct SCP at points of sales. However this type of dissemination of SCP via participant responsibility (casual source acquisition) is noted by Peter Braidley (RNLI); Nicola Carnie (DEFRA); Robin Rafeal (MCA); Sue Tolland (DEFRA); Jerry Urdley (RYA) and Fiona Wood (DCMS) to be less effective because of the problems that are associated with casual interpretation . This is because NGB that provide training facilities are better equipped to support the dissemination of SCP to CAS participants because they provide expert interpreters and information. Peter Braidley (RNLI) pointed out that, to become effective, SCP must be well formulated because participant ‘interpretation’ is the only measure of their efficiency (*para, 37:-38, 39, 40*). This clearly suggests that ‘subjectivity’ will restrain the overall effectiveness of SCP casual interpretation. Sue Tolland (DEFRA) further suggested that SCP require a consolidated back up system cultivated through Bylaw power to confirm their effectiveness (*para, 10:- 60*). This information is linked to the conclusions made from the year 2000 field work (Section 5.4.1) which showed that CAS interviewees’ perceptions of self-ability in some cases can be assumed to be based on participant knowledge derived from informal sources and personal experiences. Hence it may be

concluded that CAS participants are implementing SCP from poor information sources and because these types of information systems are dominated by 'self-regulation concepts' the overall management of CAS is becoming ineffective.

*There are no indicators currently available to measure the effectiveness of SCP obtained from casual sources. The only available measure of SCP participant effectiveness is through supervised modes of delivery. Hence, this study concludes that encouraging SCP dissemination by casual (non-expert) routes of delivery may only have a limited benefit for CAS management.*

## **7.6 Local Authorities**

The stakeholder consensus confirmed that Local Authorities play an important role in the delivery of good CAS management. Jerry Urdley (RYA) identified DEFRA as managing recreational activity through the production of Bylaw powers enforced by LA (*para 19:-68*). All stakeholders noted that LA had the powers necessary to drive forward CAS management strategies and therefore to ensure good CAS management is developed all issues that include LA must be examined.

Before the discussion of CAS relating to LA it is pertinent to readdress one of the issues identified from the year 2000 field work. Section 5.7.3 showed that over 50% of the CAS respondents were unaware of any regulating or control mechanism relating to their CAS and also perceived that CAS policies and management guidelines were ineffective. Additionally that CAS participants from the 16-26 age groups, visitors to the area, beginner and intermediate participants were significantly less likely to recognise CAS regulating or control mechanisms this clearly links to LA.

### 7.6.1 Local Authorities and CAS Management

The stakeholder interviews indicate that individual LA differ in their management of CAS. Data drawn from the interviews suggest that some LA are passive with respect to CAS. Sue Tolland (DEFRA) noted that some LA seem to have poor coastal recreational management skills (*para, 5: - 43*) and suggested that there is a pressing need for coastal LA to be more proactive at managing CAS participants (*para 6:28*). Peter Braidley (RNLI); Robin Rafeal (MCA); David Reid (BSA) and Sue Tolland (DEFRA) noted inconsistency in the manner that different LA manage their coastline with regard to CAS. Peter Braidley (RNLI) emphasised that, because there is no 'real' national legislation in relation to CAS, this compounds LA passiveness because LA are left to their own devices to produce CAS legislation and local regulation (*para, 5:-24, 25*). Robin Rafeal (MCA) stated that in some cases the rigid management approach (such as a blanket ban or a demanding regulation procedure) adopted by some LA has created disharmony and the displacement of activities. The result of these approaches has caused problems to move elsewhere, often intensifying the difficulties already experienced by neighbouring LA (*para 9:- 85,86,87,89,90*).

Jerry Urdley (RYA) agreed that LA need expert CAS managers to ensure effective 'stakeholder' consultations and to further confirm that obligations and duties are carried out. Urdley (RYA) further suggests that CAS expertise is necessary because specialisation associated with the inshore zone is entrenched in forms of management and this can influence the way things are done. (This study perceives this to mean that in some LA management has generically evolved without expert CAS orientation.) Robin Rafeal (MCA) suggested that many LA could attempt to become 'aquatic centres of expertise' based on safety as an alternative to a tourism 'helter skelter' (*para, 23:-243*). All stakeholders agreed that in the interest of CAS, LA would need to develop stronger relationships with all those that have an interest in CAS.

*This study concludes that LA passiveness hinders the development of sustainable CAS management because it disjoints management structures and detracts from the ICZM framework.* However, LA passiveness is linked to a lack of in-house expertise. This point is discussed below.

### **7.6.2 Local Authorities Internal CAS Expertise**

Robin Rafeal (MCA) states that some LA passiveness can be ascribed to a lack of in-house expertise in CAS management (*para, 7:-57,61,63*). For instance, John Broad (LA and RNLI) noted that problems exist in Devon and Cornwall with the registration of surf schools (*para, 4:-11*). David Reid (BSA) supported John Broad and added that concerns (discussed in Section 7.5) are exacerbated by a lack of LA intervention (*para, 12:-62*). There is a strong suggestion in the interviews that some NGB and organisations find interaction with some LA difficult and this is ascribed to the lack of expertise or ‘finding the man who understands’. Robin Rafeal (MCA) stated that, during the introduction to LA of the MCA ‘departure’ safety code, LA representatives frequently had no boat or marine-maritime training and their job descriptions included the licensing of taxis, clubs, pubs and in one case, a zoo (*para, 7:-58,59,60,61,62*). This generalist approach of some

LA to CAS management will need to be taken into consideration during the development of any sustainable management model.

In contrast to the perceived passiveness of some LA, Peter Braidley (RNLI) Robin Rafeal (MCA) Sue Tolland (DEFRA) and Jerry Urdley (RYA) all identified the LA from Poole (Dorset) to be CAS ‘dynamic’. This is because Poole has developed good marine and maritime CAS management programmes. Robin Rafeal (MCA) stated that, to become CAS operative, LA with coastal frontages require someone properly trained and with specific responsibilities. This line of reasoning clearly emphasises the need for in-house

LA CAS expertise. However, Robin Rafeal (MCA) suggested that the lack of LA in-house CAS expertise might be linked to issues of funding availability (*para, 7:-63,64*).

*This study must therefore conclude that a barrier in the development of individual CAS management models will be caused by the (possibly resource-limited) inability of some LA to provide CAS related in-house expertise.<sup>3</sup>*

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<sup>3</sup> An example that reinforces the above discussions of LA resource limitations is provided by Sims (2003) who noted that during 2003 the Plymouth LA made their coastal officer redundant. One element of the coastal officer post was to oversee the completion of the third revision of the Port of Plymouth Recreation Study, a clear link to CAS.

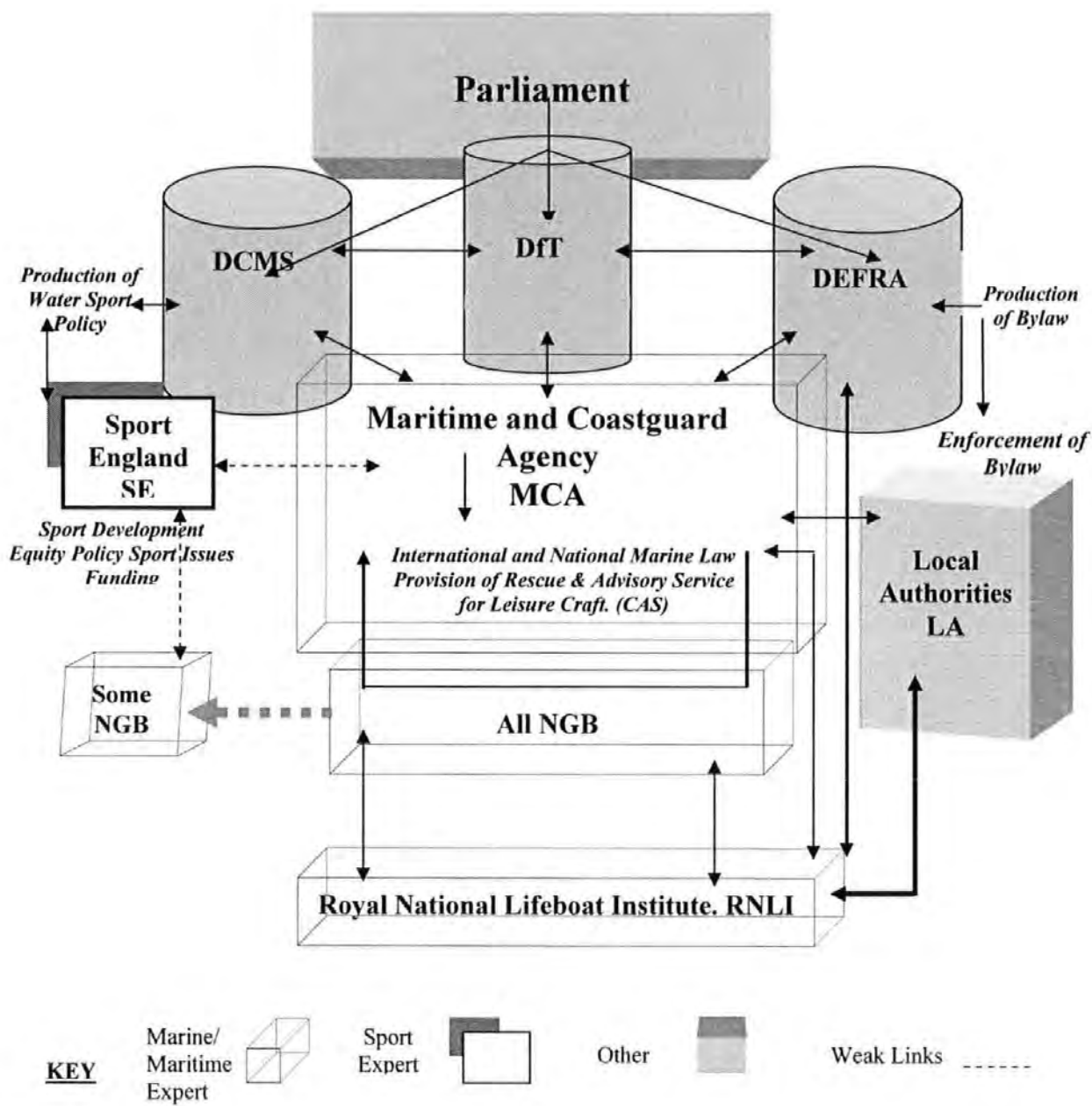


Figure 7.4 The 2002 'CAS Specific' Management Information System Identified by this Study

From the information drawn from the interviews, Figure 7.4 can extend the perceived communication network that is associated with CAS and identify the areas of CAS marine and maritime expertise. Figure 7.4 also shows that there are several weak communication links or no links at all in the overall CAS information hierarchy. The diagram illustrates that many of the bodies that have a role in the development of CAS management also have no in-house CAS marine and maritime expertise.

## **7.7 Stage Two: Objective Three-Coastal Loading and Management Initiatives**

Chapter Six of this study has shown that CAS participants have strong opinions in relation to coastal loading and saturation levels and to the ways that saturation affects their quality of CAS experience. CAS participants also recognise the importance of CAS management initiatives in that they provide for safe participation. Therefore, the development of a CAS management system will depend on the correct balance of activities to ensure CAS sustainability. The results of the year 2000 field work concluded that many CAS activities are perceived by their participants to be incompatible when sharing the same water space. In particular it was evident (in relation to achievable water speed) that the power source of the craft affected the CAS participants' perceptions of risk. For instance, those who take part in sub-aqua activities were far more likely to find other 'human' activities such as swimming as a compatible activity, participants of wind activities preferred to share water space with other wind activities and similar preferences were shown by those who take part in fuel powered activities.

The results of the 2000 field work also showed that the perceptions of compatibility ideals by CAS participants were linked to their perceptions of ability, in that the 'beginners' in any CAS activity were the least desirable participants to share water space



with. All the ability categories agreed beginners increased their perceptions of risk when interacting in the same water space. This suggested that intermediate and experienced participants had possibly recalled their own personal actions when at this stage and had a retrospective awareness that they unknowingly caused hazardous interactions. Hence coastal loading was identified as an important element of a CAS management system. Of equal importance was the ability of coastal managers to understand the coastal loading issue. The issues relating to coastal loading are inextricably linked to CAS participant perceptions of the CAS in situ control management mechanisms and the year 2000 field work (Chapter Five) emphasised how CAS participants lacked any awareness of these mechanisms.

#### **7.7.1 CAS Stakeholders' Understanding of Coastal Loading**

There are many disagreements in the understanding of coastal loading by the CAS stakeholders consulted. John Broad (LA & RNLI), Robin Rafeal (MCA), David Reid (BSA) and Jerry Urdley (RYA) all noted that the breaching of saturation levels is a constant hazard for CAS participants and that growth in craft sales exacerbates the problem. Robin Rafeal (MCA) particularly emphasised the growth of Personal Water Craft, commenting that there were over 26,000 in the country (*para, 10:-88,99*). John Broad (LA & RNLI) referred to lifeguard information that suggested that major beaches on the North Coast of Cornwall are well over their saturation levels (*para, 7:-23*).

*These observations have important implications for this study because the vertical as well as the horizontal understanding of CAS issues by stakeholder' will be imperative for the development of sustainable CAS management. For example, sport issues that are economically, socially or environmentally linked.*

Lorraine Brown (SE) agreed that not enough was known by SE about CAS growth to comment (*para, 7:-33*) and Sue Tolland (DEFRA) stated that because DEFRA did not get involved in individual areas this led to a lack of knowledge about saturation levels (*para, 7:-53*). The interviews show that these disagreements can be attributed to breaches of grass root information. . This further emphasises the importance of CAS expertise to the successful development of a management system because those having marine and maritime expertise (such as the MCA, NGB and the RNLI) are knowledgeable about CAS saturation levels and are aware of the issues surrounding coastal loading

### **7.7.2 CAS Management Initiatives**

Stakeholders suggest that current CAS management initiatives offer only limited solutions to the overall management of CAS because many of these initiatives require special administrative procedures to ensure their effectiveness.

#### **7.7.2.1 Self-Regulation**

The data show that self-regulation is perceived by the stakeholders to have a low level of effectiveness. Jerry Urdley (RYA) stated that social and demographic changes affect CAS participant attitudes in relation to the concept of responsibility of self and to others. These types of social change are also considered by Peter Braidley (RNLI), Robin Rafeal (MCA) and Jerry Urdley (RYA) who all agreed that both the second hand boat market and inappropriate CAS participant role models (as publicised within the media) frustrate the self-regulation concept (*para, 9:-33,34,35,36,37*). For instance, through the media, celebrities are often shown to drive or pilot vehicles with great speed and abandonment (although they are in managed environments). Section 2.3.2 has shown that the media has influence on some social structures and can instigate and encourage types of cultural interfaces. Celebrity 'role models' are perceived to encourage CAS participant irresponsibility. Fiona Wood (DCMS) emphasised that self-regulation is not the ideal

management tool for all CAS participants (*para, 9:-32*) and Lorraine Brown (SE) pointed out that self-regulation would 'invariable need somebody to take the lead' (*para, 9:-39,40*). Lorraine Brown's point is supported by Peter Braidley's (RNLI) consideration that some sports champion themselves in the role of self-regulation (*para, 10:-41,42,43*). This study associates 'sport championing' with NGB drivers and therefore self-regulation is subject to the problems that have been attributed to NGB (Section 7.4). The ability of the self-regulation concept to contribute effectively to CAS management is further complicated by the subjectivity of casual SCP interpretation (Section 7.5.3). For instance, Robin Rafeal (MCA) and Sue Tolland (DEFRA) suggested that SCP could be delivered from retail and manufacturing sources. Thus a CAS related product could have SCP written on the packaging or placed internally as a leaflet/book. However, Rafeal and Tolland both emphasised that there can be no accountability for these types of SCP delivery modes and the SCP provided may not be read. Hence, these types of actions may contribute little to self-regulatory schemes. *This study concludes that the self-regulation initiative is fraught with management complications and cannot make a measurable contribution to CAS management.*

#### 7.7.2.2 CAS Insurance

The consensus of stakeholders shows that 'dependant on activity' some or all CAS participants should have third party insurance. Robin Rafeal (MCA) and Peter Braidley (RNLI) suggested that certain types of CAS insurance should be mandatory. Robin Rafeal (MCA) noted that the take up of boating insurance by CAS participants is low (*para 19:-201, 202*). John Broad (LA and RNLI), Peter Braidley (RNLI), Sue Tolland (DEFRA) and Fiona Wood (DCMS) all drew analogies between CAS and road traffic. For instance, a walker/swimmer does not require insurance in comparison to a motorcycle rider that does. Urdley (RYA) also compared types of craft to motor cars and identified the need for different systems for insurance as he considered that a stronger case for

insurance existed for small powerful craft that launch from the shore (*para 10:-42,43*). The fact that an analogy was drawn between CAS activities and road usage may signal a CAS remit to develop a 'water traffic' analogue. However, the administration of this type of initiative is perceived to be problematic. For instance, John Broad (LA & RNLI) clearly thought that the policing of an insurance initiative would be problematic (*para, 10: -33, 34*).

*The term 'water or maritime traffic' is noted by this study to provide a good starting point for any CAS insurance initiative and worthy of further consideration.*

#### 7.7.2.3 Marine/Maritime Licence

Because of the focus on 'Marine/Maritime Traffic', stakeholders were asked their views on the development of a maritime licence that would allow the holder to keep records of all types of CAS related water-based qualifications on one card. With the exception of Sue Tolland DEFRA who had no view, the consensus of stakeholders agreed that levels of marine competence of all CAS activities (this meaning all the types of CAS discussed in this thesis) registered on a singular electronic swipe card would support CAS management. John Broad (RNLI & LA); Lorraine Brown (SE); Nicola Carnie (DEFRA); Robin Rafeal (MCA) and David Reid (BSA) perceived that a generic marine card could act as a catalyst for cross-pollination between NGB and Government Agencies. Jerry Urdley (RYA) agreed that CAS participants that operate small fast craft that launched from the shore would especially benefit and that only those not competent or confident would oppose the idea (*para 11:-39,40*). However all stakeholders agreed that enforcement may create contention amongst CAS participants and, because of this, at the outset a CAS participant 'voluntary approach' would be necessary. *Because of the benefits associated with the introduction of a marine licence, this study recommends that the maritime licence concept is researched further.*

#### 7.7.2.4 Zoning Policies

The data show that zoning policies are supported by all 2002 stakeholders. Dorset in particular was identified by Peter Braidley (RNLI), Robin Rafeal (MCA) and Sue Tolland (DEFRA) as demonstrating successful zoning practices. John Broad (LA & RNLI) and David Reid (BSA) emphasised that zoning practices are only successful if they are managed or 'policed' by a LA or an alternative authority. And, as Robin Rafeal (MCA) previously discussed, zoning can be a cause of CAS displacement which can result in the off-loading of a CAS problem to another LA (*para, 9:-87,88,89*).

Nicola Carnie (DEFRA) noted that, although zoning was a good idea, accessibility is an issue and, because zones could be 'abysmally managed', this would reduce zone ability to perform as an effective management mechanism. Furthermore, Jerry Urdley (RYA) deliberated issues of 'risk and accountability.' This point has important implications for the development of zoning because this issue will eventually impact upon zoning mechanisms and amplify other concerns such as self-regulation and administrative procedures. Therefore, because of the arguments associated with self-regulation, CAS participant ability and the implications of administration, *this study concludes that without intervention at a strategic level the future performance of CAS zoning systems will be restricted.*

#### 7.7.2.5 Education and Training

Education and training is identified by all stakeholders to be a priority in the effective management of CAS. John Broad (LA & RNLI) perceived that education and training contribute greatly to effective CAS management (*para, 12:-52*). Variations in NGB CAS expertise are acknowledged by John Broad (LA & RNLI), Peter Braidley (RNLI), Lorraine Brown (SE), Nicola Carnie (DEFRA), David Reid (BSA), Sue Tolland (DEFRA), Fiona Wood (DCMS) and Jerry Urdley (RYA) to have an important role in the

development of CAS education and training mechanisms. However, a significant factor affecting the capacity of NGB to act as educators and trainers for CAS participants is the legal implications associated with risk. For instance, Jerry Urdley (RYA) emphasised that CAS education and training development may be restrained because risk accountability is becoming more prolific (*para, 14:-54*). This may be interpreted, for instance, as the CAS instructors' level of responsibility to a CAS participant and vice versa. Furthermore, Robin Rafeal (MCA) advocates that marine and maritime education and training begin at an early age and be integrated into primary/secondary national curriculum activities. Rafeal perceives that this type of education mechanism may also have a positive external effect for parents (*para 14: -156,157*).

The stakeholder consultations showed that a number of options for education were available. For instance, SE is identified by a number of stakeholders as having the potential to play an important partnership role in the development of good CAS education and training. Peter Braidley (RNLI) suggested the Department for Education as being a possible vehicle for CAS education and training and this links to the earlier Rafeal (MCA) suggestion that marine and maritime education should start at an early age. Stakeholders also identify the role of the MCA and RNLI in the development of effective CAS education and training.

This study concludes that CAS participant education and training is vital to the development of a sustainable CAS management model. However, the evolution of CAS educational good practice will be restricted because the discussion above shows that differences exist in stakeholder perceptions of the modes of CAS education and training.

*This study recommends that, in order to increase the capacity of education and training mechanisms, further research should explore the structures of CAS education and training and the development of facilitation modes.*

## **7.8 Stage Two: Objective Four-Marine Stakeholders and the Regulation, Control Mechanisms and Facilities that Govern Coastal Sports**

The results of the year 2000 field work showed that government policy and CAS management structures are important to participants of CAS. However, a significant proportion of the sample did not know what CAS policy was in place or the types of CAS management structures. Therefore, an important element of the 2002 stakeholder consultation was to examine these issues.

### **7.8.1 The Bylaw System**

Discussion of the year 2000 field work led to the conclusion that (with the exception of SE who did not comment) all CAS stakeholders agreed that the coastal Bylaw system is not effective and that an updating procedure was required. Sue Tolland (DEFRA) noted that an update of the Bylaw system is 'work in progress' and that only minor alterations were required to bring them up to date (*para.5:-1*). However, a number of other 'expert' stakeholders suggest that these minor Bylaw alterations will not be adequate.

Sue Tolland (DEFRA) stressed that a guide for LA to their Bylaw making powers is to be prepared by a private sector consultant and this would provide a definitive guide on good practice for LA. However, Section 7.6-7.7 concluded that LA in-house CAS expertise is sporadic and hence the application of 'good practice' to Bylaws which have relevance to CAS may be inappropriate i.e. use of Bylaws to manage CAS will be ineffective until expert in-house knowledge is present. Furthermore it may be argued that DEFRA may not be the correct department for the delivery of Bylaws concerning CAS. This work has shown that many CAS issues are linked to issues associated with transport and, because DfT manage transport issues, it is this department that should be responsible for the

development of CAS 'traffic' control mechanisms. Furthermore, the DfT CAS agent (the MCA) have clear expertise in marine/maritime transport and this would provide an instrument for the development of sustainable CAS control mechanisms. *Therefore this study concludes that, because DEFRA do not have the correct 'marine/maritime transport' expertise for the development of sustainable CAS control mechanisms, this will hinder the development of CAS management structures.*

### **7.8.2 Complexity of Marine and Maritime Policy**

A majority of CAS stakeholders criticise the intricacy of the marine and maritime policy systems because they are perceived to confuse individuals involved in CAS management issues. Jerry Urdley (RYA) stated that a 'bewildering' set of statutory and non-statutory mechanisms are in place that require detailed attention in order to gain an understanding of the overall complexities (*para, 4: -12*).

All stakeholders perceived that clarity in planning concerns and the need for good stakeholder consultations are vital for the future management of CAS. Nicola Carnie (DEFRA) and Fiona Wood (DCMS) stated that good management practices are produced by interested parties getting involved and speaking up during the development of management processes. This was acknowledged earlier by David Reid (BSA) who affirmed the benefits to be derived from NGB being proactive in decision-making processes. Peter Braidley (RNLI) suggested that planning and policy issues should become more transparent to external agencies, communities and industries. Furthermore, fluid information exchanges by all interested parties would assist in the production of good CAS management schemes because they would reduce misinformation (*para, 6: -28,29*).



*Therefore, because marine and maritime planning and policy complexities are acknowledged to exist by stakeholders, this study must conclude that such complexities will be exacerbated by the inefficiency of communication exchanges and the success of management initiatives will be restricted.*

### **7.8.3 Integrated Coastal Zone Management**

A consensus of the stakeholders shows that the ICZM concept may help increase the self-consistency of marine and maritime policy and planning. Peter Braidley (RNLI) stated that the ICZM concept would assist in the integration of information systems (*para, 16: - 80,81*). Jerry Urdley (RYA) emphasised that the ICZM initiative would create a non-antagonistic 'information exchange model' and allow those with interest in CAS to become more integrated (*para, 14: 53 54*). Nicola Carnie (DEFRA) stated that Parliament has accepted that ICZM can act as a strategy for coastal managers and that this will assist in the implementation of ideas from social, economic and environmental perspectives (*para, 3:2*). In support of ICZM initiatives the results of the year 2000 field work showed many CAS participants had affiliations to 'alternative' organisations. In particular, Surfers Against Sewage (SAS) an environmental pressure group which has little interface with CAS management practices was shown to have a larger percentage of the members from the wave related participants than the wave related NGB (British Surfing Association (BSA)). This clearly indicates that CAS participants are sensitive to the environment in which they practice their activities. Hence there is an opportunity for the ecosystem approach advocated by ICZM to be incorporated into the NGB style and purpose.

With the exception of SE (who did not comment) all stakeholders perceived that incoming legislation and recommendations from Europe would affect the way CAS will be managed in the future. ICZM was identified by Peter Braidley (RNLI), Nicola Carnie

(DEFRA), Sue Tolland (DEFRA) and Jerry Urdley (RYA) as the prototype of European marine and maritime management initiatives.

The stakeholder discussions confirmed that CAS participant safety is of a high priority and will influence the interpretation and acceptance of incoming legislation and regulation. Peter Braidley (RNLI), Robin Rafeal (MCA) and David Reid (BSA) thought that incoming regulations associated with safety issues would be welcomed, whereas regulation for regulation's sake would not. Robin Rafeal (MCA) also provided a European comparison of the ways that CAS are managed. For instance, identification and operational qualifications were required for CAS participants in some European countries, contrary to the UK situation which requires neither (*para*, 5:-34,35,36).

*Therefore, because European directives and legislation will in the long-term affect the UK CAS, this study concludes that ICZM will be an important instrument for the development of marine and maritime management systems. This is because it will act as a mediator for stakeholder dialogue providing an ideal 'information exchange model' and thus provide the framework for the creation of a sustainable CAS management model.*

#### **7.8.4 Issues of a Single Central Marine and Maritime Body**

If the number of avoidable marine incidents (related to lack of participant ability, poor craft maintenance or irresponsibility) is to be kept to a minimum, this study envisages the provision of a marine and maritime policing body. However, the stakeholder consultations suggest that a major barrier to the creation of a UK marine and maritime policing body would be the associated costs. For instance, since the effectiveness of a marine and maritime policing body is determined by the manpower available, the length of the UK coastline creates a significant problem. Nicola Carnie (DEFRA) emphasised

that to bring such an initiative on line would possibly mean involving the police force and that currently the UK has barely enough police officers for inland activities (*para, 14:-56*). It may be argued however, that terrestrial police force activities are very different to the CAS actions that may require policing. For instance, this study shows that CAS concerns are primarily related to issues of 'marine traffic'. Thus, other types of policing or more importantly, 'marine policing' may be considered. However, the costs and benefits of marine and maritime policing will require further research. *Therefore, this study concludes that the role of marine and maritime policing in the future development of CAS management needs close examination.*

#### **7.8.5 Cost and Benefit; the Economic Considerations**

Using a cost/benefit analysis to measure the effectiveness of CAS measurement is fraught with problems. Earlier discussions noted that creation of a marine and maritime police force was limited by the cost. However, using economic instruments as a sole assessment measure is problematic because socially related phenomena are subjective by nature. For instance, Robin Rafeal (MCA) recalled that MCA commercial craft prosecution concluded with a fine of £8,000 being imposed on the pilot, but that the case had cost some £50,000 to pursue (*para, 22:-224, 225*). However, Rafeal (MCA) further stated that the prosecution sent out a clear message to others that the MCA would bring actions against those who flouted commercial shipping safety procedures. The action had resulted in an increase of pilot attention to the safety of their crews and ships. Thus, success from an economic perspective may only be measured via a reduction of commercial shipping accidents associated with poor crew or vessel standards. One economic measure that may be used in a cost-benefit situation is the cost of life. A consensus of the stakeholders agreed that marine and maritime accidents would affect the economy, and effective CAS management programmes/structures and policies could create significant economic savings for a region. Lorraine Brown (SE) noted that death

or the inability to work would create an economic impact and noted that solutions to reduce marine and maritime incidents are imperative (*para, 18:-72*). Fiona Wood (DCMS) noted that the residue of marine accidents in the guise of a fear factor (*impact of media coverage*) would have an impact on tourism (*para, 16:-56, 57*). Peter Braidley (RNLI) noted anything from £800,000 up to £1.2 million to be the cost of life depending on what parameters that are taken into account. Peter Braidley (RNLI) further noted that ‘massive’ consequences are associated with the loss of life, loss of revenue earner, the tax loss, the community revenue loss, and all the costs of supporting the family (*para, 20:-84, 85, 86*).

Important to this study is the fact that both Peter Braidley (RNLI) and Robin Rafeal (MCA) were the only persons to have the ability to associate a true ‘figure’ of cost to the loss of life in the marine environment. Robin Rafeal (MCA) stated that 2 million pounds per death is the general measure used by government. However, a great deal of marine and maritime related accidents are unknown with the exception of sub-aqua death (fatalities average 25 p.a.) (*para, 24:-245*). Robin Rafeal (MCA) further noted that many LA do not record these types of statistics and that, due to the irregularity of recordings and quantification, mitigation becomes difficult (*para, 24:-249,250,251*). However, this lack of marine and maritime related statistical recordings may be linked to the lack of in-house marine and maritime expertise that has been associated with LA. *This study concludes that a lack of CAS related accident statistics has hindered the development of CAS management and will continue to do so.*

#### **7.8.6 CAS Core Direction**

The stakeholder consultations show that a variety of stakeholder perceptions existed in relation to what should be the core direction for CAS management development. This study encouraged stakeholders to consider whether a single entity might produce a

national CAS harmonising framework. David Reid (BSA) suggested that a central body would certainly aid the dissemination of CAS marine and maritime information. Peter Braidley (RNLI) and Jerry Urdley (RYA) suggest that there is not a single government department with over-arching responsibility for this role. Peter Braidley (RNLI) stated that both the RNLI and RoSPA are currently pressing for the production of a single responsible marine agency to act as a point of contact for safety and policing (*para, 22:-88,89,94*). John Broad (LA & RNLI) noted that the MCA is significant because it is the umbrella organisation for marine safety, but he could not identify a single overall agency with the potential to develop a CAS harmonisation framework. Robin Rafeal (MCA) noted that the MCA is already responsible for the safety and qualifications of commercial pilots and that, even in sport, vessel safety and the valid qualification of the pilot and crew is fundamental to the activity. Fiona Wood (DCMS) perceived that, in close collaboration with DCMS, SE, NGB and other interested bodies, DEFRA may be the ideal vehicle. Sue Tolland (DEFRA) noted that different agencies each have separate aims and that this could lead to confusion in the production of a guide. Sue Tolland further stated that the DEFRA guide should be the definitive where there is concern for law and what the LA, NGB and the individual's roles are (*para, 16:-85, 86,89*). In contradiction Peter Braidley (RNLI) suggested that DEFRA would not necessarily be ideal, and that because DEFRA and DfT managed a great deal of coastal business the MCA as an agent might be the natural selection. David Reid (BSA) also criticised the choice of DEFRA as an option due to their small grass root interaction and further suggested that SE may be the ideal body because it had an association with the English Surfing Federation (ESF) (*para 24:-104,105,106*). Lorraine Brown (SE) considered SE or UK Sport to be an option. However, Brown also emphasised that the question was 'tricky' and that it depended on the types of aims and objectives endorsed. However, Jerry Urdley (RYA) felt that SE could offer no core role and that the UK stance was

entangled in the innermost approaches of social inclusion, sustainable development and integrated transport (*para, 17:-63, 64, 65*).

*Analysis of the above concludes that the inconsistencies of stakeholder response derive from 'question interpretation'. This is important to this study because it shows the way that CAS is clouded in ambiguities. This has affected many of the issues discussed in this work and will continue to hinder the development of CAS. A central core underpins, and provides for, a system format. Therefore, this study concludes that one solution for sustainable CAS management will derive from the clear identification of the core expert players and the clear articulation of their roles and responsibilities.*

## **7.9 Summary**

Chapter Seven has analysed the data from the year 2002 stakeholder interviews. Four objectives were identified to answer the hypothesis 'that organisational barriers exist within the cascade of bodies that have an interest in CAS'. It is clear from the analysis of the stakeholder data that this study must conclude,

**'That organisational barriers do exist within the arrangement of bodies that have an interest in CAS'.**

This is because the data analysis of the 2002 stakeholder consultations has shown that a number of organisational issues and barriers do exist and that these frustrate the development of a sustainable CAS management system. These are summarised below.

### **7.9.1 Identification of the CAS Management Organisational Issues and Barriers**

1. The structural changes in the responsibilities and organisation of government departments negatively affect the management of CAS

2. CAS communication links between SE, the MCA and the three departments of central government are inconsistent
3. Expert knowledge of CAS management is not an organisational target in the three departments of central government
4. Responsibility for CAS by the three departments of central government is not a central 'priority' task
5. The three departments of central government that provide the mechanism for CAS governance lack clarity concerning CAS grass root issues. This suggests that communications from the bottom up are not functioning effectively
6. Poor information exchange has clouded CAS issues in ambiguity
7. DfT CAS safety drivers are inert and are not proactively generated internally because DfT's commitment to CAS safety has derived solely from its obligations to international and national law rather than CAS safety concerns
8. DEFRA do not have the correct 'marine/maritime transport' expertise for the development of sustainable CAS control mechanisms
9. Marine and maritime planning and policy complexities are acknowledged to exist by stakeholders
10. CAS stakeholders differ in their understanding of coastal loading
11. CAS do not directly come under any specific government legislation (apart from Bylaws)
12. Safety and qualifications of commercial and sport pilots and crew are fundamental
13. Maritime policing may have important implications for the future development of CAS management

14. Terrestrial police force activities are very different to CAS 'maritime traffic' actions that may require policing.
15. Costs and benefits of marine and maritime policing require further research
16. NGB do not have clear communication links with the departments of central government and their agencies
17. Funding inconsistencies and the perceived 'unbalanced approach' by government agencies to some NGB foster negative economic competitive influences
18. NGB at an 'embryonic' stage require additional assistance from government agencies
19. NGB private status restricts their ability to perform objectively and effectively in a CAS management strategy
20. The lack of 'official status' of some NGB influences the development of a sustainable CAS management model
21. The separate aims of different agencies could lead to confusion in the development of a sustainable CAS management model
22. Conflicting information produced by less able bodies that claim NGB status will reduce the overall effectiveness of SCP
23. Communication complexities associated with overlapping SE and UK sport responsibilities to NGB will hinder the development rate of a NGB
24. There are no indicators currently available to measure the effectiveness of SCP obtained from casual sources. The only available measure of SCP participant effectiveness is through supervised modes of delivery.
25. Increasing SCP dissemination mechanisms to include casual non-expertise routes of delivery will provide only a limited advantage to a CAS management system



26. Official endorsed SCP procedures will be imperative to the driving force in a CAS management model
27. LA passiveness hinders the development of sustainable CAS management because it disjoints management structures and detracts from the ICZM framework
28. The development of individual CAS management models will be restricted because of a lack of in-house marine and maritime expertise by LA
29. The system of Bylaws as a management mechanism for CAS will remain ineffective until expert LA in-house administration procedures are in position
30. Quantification and mitigation of the marine environment is difficult because LA irregularly record or do not record marine and maritime accident statistics
31. CAS education and training is impeded because it is not incorporated into simple structures
32. Self-regulation has a low level of CAS management effectiveness
33. Self-regulation does not aid the operation of CAS zoning systems
34. Zoning practices are only successful if they are managed or 'policed' by a LA or an alternative authority.
35. Zoning can cause CAS displacement and this can result in the off-loading of a CAS problem to another LA
36. CAS participant abilities can affect the capacity of a zoning mechanism to perform effectively
37. Issues of 'risk and accountability' will impact upon zoning mechanisms
38. CAS participants should have third party insurance, and certain types of CAS insurance should be mandatory

39. Economic instruments as a sole assessment measure of CAS management mechanisms are problematic because social phenomena are subjective by nature

40. European directives and legislation will affect the UK CAS

41. ICZM will be an important instrument for the development of marine and maritime management systems

## **7.10 Stakeholder Recommendations for Sustainable CAS Management**

In addition to the identification of organisational barriers, the analysis of the year 2002 stakeholder consultations revealed stakeholder recommendations that may assist in the development of a sustainable management model. These are summarised below under four distinct headings.

### **7.10.1 Development of Marine and Maritime Expertise**

- Education and training is a priority for effective management of CAS
- Training and education must have government approval
- MCA is a source of marine and maritime expertise
- SE has an important partnership role in the development of good CAS education and training
- The Department for Education is a possible vehicle for CAS education and training
- The MCA and RNLI can develop effective CAS education and training
- NGB play a critical role in the development of sustainable CAS and have a significant role in the management of CAS
- NGB are a vehicle for the dissemination of Sport Codes of Practice (SCP) and can raise awareness of educational schemes
- Individual NGB have played a positive role in the evolution of CAS and are therefore important for the future development of CAS
- SCP are critical for the development of CAS management plans

- Individual SCP should be developed with the participation of the relevant CAS NGB
- Individual NGB provide specialist training for CAS participants
- LA play an important role in the delivery of good CAS management
- LA could strive to become 'aquatic centres of expertise'.

#### **7.10.2 Clear Definition of Marine and Maritime Organisations' Roles and Responsibilities**

- DfT manage transport issues and therefore should be responsible for the development of CAS 'marine transport' control mechanisms
- The MCA is the main artery of the government's commitment to marine traffic
- The ICZM mechanism cuts through bureaucracy and provides a high profile regional network
- Parliament accepts that ICZM can act as a strategy for coastal managers and will assist in the implementation of ideas from social, economic and environmental perspectives
- The ICZM division of DEFRA is the main artery of the government's commitment to marine and maritime sustainable development
- DCMS and DEFRA are aware of their Departments' specific responsibilities to water recreation

#### **7.10.3 Development of Streamlined CAS Communication Systems**

- A central body would aid the dissemination of CAS marine and maritime information
- The Maritime and Coastguard Agency (MCA) and SE are important factors in the communication processes
- Clarity in planning concerns and the need for good stakeholder consultations is vital for the future management of CAS
- Good management practices are produced by interested parties getting involved and speaking up in the management processes.
- Planning and policy issues should become more transparent to external agencies, communities and industries
- Cross departmental understanding of CAS issues by stakeholders is imperative for the future development of sustainable CAS management model
- Fluid information exchanges between all interested parties will assist in the production of good CAS management schemes by reducing misinformation

- ICZM is a mediator for stakeholder dialogue and provides a non-antagonistic information exchange model
- The ICZM concept is a catalyst for the improvement of communication exchanges and marine and maritime policy and planning intelligibility
- ICZM is becoming the underpinning rationale for the MCA

#### **7.10.4 Development of Sustainable CAS Management**

- Bylaw update will require reassessment after implementation
- SCP require a consolidated back up system of Bylaws to confirm their effectiveness
- The marine 'traffic' analogue has important implications for a CAS management model.
- A voluntary marine licence could act as a catalyst for cross-pollination between NGB and Government Agencies
- CAS participant safety is of a high priority and will influence interpretation and acceptance of incoming legislation and regulation
- Identification and operational qualifications are required for CAS participants in some European countries

The work reported here has examined the CAS landscape from both a CAS participant perspective and from the viewpoint of CAS stakeholders. Therefore, using the conclusions (Chapters Five, Six and Seven) that have been drawn from representatives of CAS governance and from grass roots, a CAS overarching governance model can be developed. The framework of ICZM will be used to underpin this model, not only to ensure sustainability, but also to ensure compatibility with current EU and UK government initiatives. This model will be discussed in Chapter Eight.

## **CHAPTER EIGHT: CAS GOVERNANCE ORGANISATIONAL MODEL AND RELATIONSHIP TO COASTAL MANAGEMENT**

### **8.0 Introduction**

Chapters Five and Six of this thesis analysed the year 2000 field work data; the results suggested that CAS saturation levels are being reached and often exceeded in Cornwall. The year 2000 data also revealed that participants of CAS are unlikely to empathise with CAS management structures. For instance, the majority of CAS respondents did not recognise any on-site government management structure, did not understand CAS related safety policies and perceived CAS Sport Codes of Practice (SCP) to be inaccessible and therefore ineffective. In addition to this the vehicles for SCP dissemination, the National Governing Bodies, were also perceived by the year 2000 CAS respondents to be inadequate and the take up of membership of these organisations was low. Hence, Chapter Five concluded that some of the fundamental elements of CAS management systems were not functioning effectively.

This particular conclusion was supported by the arguments presented in Chapter Three which showed that there is a diffuse and complex cascade of bodies, both governmental and non-governmental, with an interest in CAS. Additionally, the information derived from the literature review, the 1998 pilot study, the 1999 LA data collection (see Section 4.4) and the year 2000 field work indicated that significant organisational barriers exist within and between the bodies that have an interest in CAS. These barriers would most certainly cause the development of unsustainable CAS management practices at both upper and grass root levels. Hence these issues prompted the development of a hypothesis, which suggested:

**That organisational barriers exist within the arrangement of bodies that has an interest in CAS.**

To examine this hypothesis a detailed examination of the underpinning CAS governance configuration took place in the year 2002 which set out four research objectives. These were, to (i) assess the responsibilities of central government, their attached agencies, and other external organisations and (ii) to identify marine and maritime coastal stakeholders that have an interest in CAS, and then (iii) to assess the awareness of the marine/maritime stakeholders of the current government management initiatives and structures and also (iv) to assess their awareness/knowledge of CAS regulation, control mechanisms and their available governance.

The identification of both the responsibilities of central and local government and its agencies and the role of non-governmental organisations allowed the structure of CAS management communication processes to be examined and organisational barriers exposed. This led to an evaluation of the overarching governance structure of CAS which in turn helped the second aim of the study to be achieved by providing a foundation for the development of a CAS management model. The second aim of this study was to develop an integrated management model that would define a clear governance CAS organisational management structure.

Analysis of the year 2002 field work (governance interviews) showed that a number of issues and barriers existed (outlined in Section 7.10) and that these could be grouped under specific headings (shown below) and furthermore, the individual issues could be structured into a hierarchy (Section 7.10 provides the Table insert number headings).

<b>Lack of Marine Expertise</b> Numbers - 1- 41
<b>CAS Organisations' Blurred Roles and Responsibilities</b> Numbers - 4, 7, 8, 11, 12, 13, 14, 15, 17, 18, 19, 22, 21, 23, 26, 29, 34, 35, 37, 38, 39, 40,41
<b>Breaches in Communication between CAS Organisations</b> Numbers – 2, 5, 6, 9, 10, 16, 21, 23, 30,33

Table 8.1 The Organisational Barriers and Issues that Affect the Sustainable Management of CAS

Additionally the barriers and issues can also be linked to grass roots management initiatives. Using the same format as Figure 8.1 these are shown as,

<b>National Governing Bodies (NGB)</b> Numbers - 18, 19, 20, 21, 23
<b>Sport Codes of Practice (SCP)</b> Numbers - 22, 23, 24, 25, 26
<b>Zoning</b> Numbers - 34, 35, 36
<b>Self-Regulation</b> Numbers - 32, 33

Table 8.2 Barriers and Issues Associated with Grass Roots Management Initiatives that Affect the Sustainable Management of CAS

The main organisational barrier in the CAS landscape is the lack of in-house CAS marine and maritime expertise in many of the organisations that have an interest in CAS. This is frustrated by organisational confusion with respect to the roles and responsibilities of CAS, and this in turn causes breaches in communications. This is supported by the data and

discussions in Chapters Five and Six which concluded that CAS sites are becoming congested and saturation levels are being exceeded.

However, analysis of the CAS governance consultations (2002) suggested processes by which organisational barriers (outlined in Section 7.10.) could be addressed and a sustainable governance management model for CAS developed. These processes include,

- The Development of Marine Expertise by Education and Training
- Clearly Defined CAS Organisational Roles and Responsibilities
- The Development of a Sustainable CAS Communication Systems
- The Development of Sustainable CAS Management Practices

This chapter describes a pragmatic governance organisational model for CAS with a strong and integrated structure. The model addresses the development of in-house CAS marine and maritime expertise and provides clarifying definitions of CAS organisations. Chapter Seven (Figure 7.1) showed that three government departments and two of the government agencies promote CAS governance. However, this study shows that for the sustainable development of CAS five government departments will need input into CAS governance. Each of these departments acts as CAS governance agent and they can be arranged in a framework that will develop a CAS integrated governance organisation model. Furthermore, Figure 7.4 showed that government departments' attached agencies (MCA and SE) carry out the roles and responsibilities in relation to CAS. However Figure 7.4 also showed that the autonomy of these agencies clearly unbalances the visual representation shown. Therefore, this work redefines the agencies and interdepartmental assemblages to improve their integration with other government systems and to create a balanced final governance and management model.



This chapter will describe Government offices, government agencies, universities, colleges and institutions and each will have a clear 'upper management' role in the development of the CAS governance organisation model.

## **8.1 The Role of the Office of the Deputy Prime Minister, the Regional Co-ordination Unit (RCU) and the Government Office Network**



ODPM as a central department was not created in its own right until May 2002. Hence, the ODPM as a new unit has had no influence on the way that CAS has evolved before then. This is why it has been excluded from the structure diagrams presented in Chapter Seven. As discussed in Section 7.2.1 the ODPM houses the Regional Co-ordination Unit (RCU) and the (interdepartmental unit) Government Office (GO) network set up in 1994. It incorporates nine Government Offices. In brief the ODPM unit catalyses by way of the RCU the underpinning responsibilities for regional and local government, covering matters relating to fire, housing, planning and regeneration. Section 4.11 showed that regional differences are critical to CAS management and because these differences derive from both physical and human processes each of them will need to be fully considered in detail. For instance, three different types of geographical cluster are applicable to CAS and, because they attract different types of activity, they demand different levels of management. These geographical differences are regionally distinct and this shows how the regional management structure of ODPM could provide a platform for good CAS communication exchanges. Furthermore, and fundamental to the conclusions summarised in Section 7.10, the ODPM office incorporates the Integrated Coastal Zone Management Section of DEFRA.

This study has shown that many of the problems associated with CAS are caused by poor communication exchanges between the different government departments. Therefore, because the main driver of the RCU mechanism is to reduce 'bureaucracy' and provide a high profile regional network, this will benefit people at grass roots because 'good interdepartmental communication exchanges' will improve horizontal and vertical service delivery. These types of good communication exchanges should reduce some of the organisational barriers shown in Section 7.10 and enable strategic management systems. Thus ODPM provides an underpinning for the overall CAS governance management structure.

## **8.2 The Department for Transport**



The Department for Transport (DfT) deals with issues associated with UK transport systems. European and international elements influence approximately 30% of the DfT operations. The formation of good European Union (EU) relationships with EU institutions and EU Member States, and the development of connections with EU candidate countries is a DfT priority. This is important to this study because Section 7.10, (Number 39) concluded that incoming European legislation would affect CAS management.

The DfT Transport 2010, 10-year plan aims 'to transform the UK transport infrastructure over the next ten years'. The DfT vision states that UK transport including maritime will become a modern, safe, high quality network that better meets people's needs and offers more choice to individuals, families, communities and businesses (DfT, 2003). The emphasis on families and communities shows that there is a clear obligation to social inclusion and it is this which could provide a strong communication channels between

DfT, DCMS and ODPM. The government commitment to the development of 'Marine Traffic' is further emphasised in Annex C, section 14 of the DfT European Common Transport Policy White Paper (DfT, 2003).

The White Paper proposes a number of objectives in relation to the maritime (and inland waterway) transport system. These include the development of infrastructure to build 'motorways of the seas'; the development of a simple regulatory framework for maritime and inland waterway transport; and attention to tightening up the maritime safety rules in co-operation with the International Maritime Organisation (IMO) and the International Labour Organisation (ILO).

These objectives will develop a European maritime traffic management system and have implications for the sustainable development of CAS because the development of a European maritime traffic management system indicates that the current commercial marine transport systems must now mature to reduce risk and promote safety.

Section 7.10 (Numbers: 7, 8, 10, 11 and 12) suggest that DfT should increase their responsibilities to CAS. Section 7.10.2.4 further suggests that the term of 'marine traffic' should be incorporated into the design of a strategic CAS management model because analogies between 'road-traffic' and the marine environment are in frequent use. The important point here is that the term of 'motorway of the sea' suggests that some sections of the marine environment will be subject to increased use by commercial shipping and therefore one way systems will become more prolific. Therefore, in a similar way to its counterpart the road motorway, it will require a 'use criterion' to apply to all marine users if it is to evolve, function safely and remain sustainable. For instance, those who partake in leisure motor driving on a road system do so with the understanding that the standard rules of the road apply. This does not detract from the activity but ensures a measure of

long term sustainability in that all 'road traffic', private or commercial, does not create negative impacts.

Thus, DfT must make accessible to other government departments, European bodies and CAS participants a clear definition of their Marine Transport System and how this system differs from UK 'Marine Sport Zones' and CAS participants must acknowledge that if commercial maritime bodies adhere to strict steerage guidelines in order to reduce elements of risk; CAS participants must also follow the same guidelines. Section 5.7 clearly revealed that at grass root level there is little understanding by CAS participants of the management mechanisms that govern CAS and that this was one cause of a heightened perspective of risk. Clear definition will also assist a CAS management plan because it will specify a framework by which different types of CAS must operate and thus guide the operation of CAS management systems.

Such developments will reduce leisure and commercial incident numbers and this in turn will reduce the costs associated with maritime rescue and the social costs of marine drowning. The frequency of maritime incidents can clearly act as an sustainability indicator for maritime practices because they can be measured from an economic perspective. Table 8.3 shows figures from the DfT sub-agent for Marine Transport, the MCA, revealing an increase in all marine and maritime-related incidents and deaths between 2002 and 2003<sup>1</sup>. The MCA (2003) Director of Maritime Operations John Astbury noted that the increase in incident numbers was due to extended search and rescue responsibilities, and the increase in sea use of CAS.

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<sup>1</sup> These are inclusive of both commercial and leisure sectors (and not explicitly coastal).

	2001	2002	Increase of
Total Number of Incidents	12,514	13,395	+ 881
Total Number of Persons Assisted	16,487	19,984	+ 3497
Total Numbers of People Rescued	4,852	5,851	+ 999
Coastguard Rescue Team Call Outs	8,096	8,819	+ 723
Total Number of Lives Lost	284	321	+ 37

Table 8.3 Maritime and Coastguard Agency (2003): Press Notice NO 03603

Economic Cost	2001 £	2002 £	Increase of £
Coastguard Costs of Rescue Team Call Outs <i>Based on lowest call out of approximately £5,000 per unit</i>	40,480,000	44,095,000	+ 3,615,000
Total Economic Value of People Rescued	9,704,000,000	11,702,000,000	+ 1,998,000,000
Total Economic Costs of Lives Lost	568,000,000	642,000,000	+ 74,000,000

Table 8.4 Economic Value and Costs Associated with Marine Accident and Rescue.  
Press Notice NO 03603

Section 7.9.2 explained that the MCA perceive £2,000,000 per marine death to be the general economic measure used by the UK government exclusive of the associated rescue costs. Table 8.4 shows that lives lost in 2002 cost the economy a total of £642,000,000 which is an increase from the previous year of some £74,000,000. However, to balance out this scale, ‘rescued persons’ must also account for a potential UK economic saving of the same figure as lives lost which is £2,000,000 per person. This is because an assumption could be made that a person rescued in a marine/maritime incident would, if not rescued, become a marine fatality. Table 8.3 shows a total saving of £11,702,000,000 associated with persons rescued in 2002, an increase of £1,998,000,000 on 2001. (Figures

available from other lifesaving institutions are not included.) Furthermore, Section 7.9.2 suggests that many of marine and maritime related accidents are unknown and, due to the irregularity of recordings, quantification is difficult. Thus the figures above should serve to stimulate further research.

The importance of the inclusion of the DfT in a CAS management system is evident because of the expertise (emphasised by the information generated) available to the DfT from their attached agency, the MCA. The conclusions drawn in Section 7.1 underline how the MCA currently acts as a hub of expertise for Marine Traffic Management. However, Section 7.9 also explained how the DfT/MCA drivers are ‘double pronged,’ the MCA regulatory powers deriving from a commercial perspective with the CAS elements having a secondary significance. This study suggests that the double prong approach to maritime management by the DfT is unsustainable, because the DfT is charging the MCA with promoting the way that the marine traffic environment is used through two very different signals. For instance, user confusion and heightened risk will accompany the drive to create marine motorways if public understanding is limited to only one of the two MCA prongs.

This point is important, because Section 2.7 discussed the growth of CAS over two decades. By using flyover data from Barrington (1976) and information gathered from Local Authority Lifeguard Stations in 1999 an assessment was made of the growth of CAS in Cornwall. This showed that a dramatic increase in CAS participation had occurred at open beach locations in Cornwall over the past two decades and that the type of CAS activity on the coastal fringe had changed significantly. The swim/bathing populations had increased and the inflatable, the most popular craft in 1976, had been exchanged for more dynamic activities, such as body-boarding, surfing or sailing. This indicates that the ‘Sport for All’ initiative endorsed by the Government (see Chapter Two), and promoted by

DCMS, in conjunction with other factors such as technical advances and social affluence increased the uptake of CAS and, because there is a continuum of encouragement for the nation to partake in active sport, this increase is likely to continue. Therefore because the move towards 'marine motorways' is primarily associated with commercial interests it will in the first instance exclude private or leisure marine traffic and thus will not take into account the sports drive by DCMS and this will impinge upon the sustainable development of the maritime environment.

By reducing the current MCA two-pronged approach to a single pronged universal approach, the MCA will transmit clear information to all marine users. In addition, this will develop the current MCA safety role so that it will act as a mentor and director of alternative micro-sources of expertise and hence reduce confusion and lead to an increase in the development of self-responsibility in CAS participants. A universal Marine Transport System facilitated by hubs of marine expertise endorsed by the MCA-DfT will catalyse an integrated approach to marine and maritime management and provide a significant knowledge platform for the sustainable development of CAS management models. Thus, the DfT and MCA are critical to an governance CAS organisation structure.

Furthermore, the economic impact of maritime safety, suggests that a single UK Marine Transport System (MTS) would provide more accurate accountability indicators and help inform decisions relating to the distribution of maritime rescue resources. For instance, it would assist in the identification of CAS participant responsibility for the costs associated with maritime rescue. *This will reduce the risk of the MCA being viewed by CAS users as a general free rescue or 'tow in' service and encourage the development of better codes of practice.*

### 8.3 Department of Culture, Media and Sport (DCMS)



Section 7 showed that DCMS has an important role in the management of CAS because this department actively encourages the uptake of sport in general. The DCMS aims to promote a fair society based on access to cultural and recreational resources, ensure excellence, nurture education throughout life and foster creativity in the economy. The 'Sport for All' initiatives are based on the DCMS, (2001) Government's Plan for Sport report discussed earlier in this thesis. The government approach of improving the nation's health through sport is clearly emphasised in the current Game Plan Report (DCMS, 2003) which notes the 'couch potato culture' and suggests a shake-up of England's sporting structures. The report shows that only 46% of Britons currently take part in fitness activities in comparison to almost 80% in Finland. It also proposes that, by building expertise to ensure that they are properly planned, organised and evaluated, bigger sporting events may take place in the UK. Furthermore, DCMS suggests that if there is a 10% increase in the number of adults participating in sport and physical activities, 6,000 lives per year in England alone will be saved and £500 million a year saved from NHS costs (DCMS, 2003). These initiatives will also increase the marine sporting capacity which will have an additional impact on Marine Traffic (discussed in Section 8.2.1). For example, Dorset County Council agreed in principle to a capital contribution of £50,000 towards the £6.4 million development costs of the Portland Sailing Academy from its Special Projects Capital Budget. The majority of funding for this new Academy development will be met by SE and the South West Regional Development Agency which together have provided a total of £6 million. The Sailing Academy is expected to provide England with both an Academy of Sailing Expertise and an Olympic training facility



(Weymouth Sailing Centre, 2003). Marine sport is an important element of the UK sports development programme and will have an important impact on Marine Transport Systems.

A clear definition of the Marine Transport System (MTS) by DfT will have a distinct impact upon DCMS and their sport agencies. This is because MTS exclusion zones such as marine sport zones will promote a specifically defined operation protocol. For example, a transport driver operates on all road links using the highway code, unless they are driving in an area that states otherwise (an off road scramble track for instance). Thus, MTS will indicate that a Marine Sport Zone (MSZ) operates differently because it operates out of the norm and is an MST exclusion zone. The description of the differences between them will be a very important element in the development of a marine management system. The MSZ (which may include launch sites) will have geographical physical type boundaries and therefore the sport activities that take place within them must be clearly defined. For instance, the range of rules, speeds and directions allowed in a MSZ may differ from an MTS, and CAS participants must be able to understand what, where and why, there are differences. This will encourage CAS participant self-responsibilities and go some way to reduce the type of accidents that are associated with the transference of 'sport related' knowledge into the marine and maritime commercial transportation environments.

Chapter Six of this study showed that assessing CAS participant perception of quality and risk can be used as a method of quantifying the social carrying capacity attached to a marine environment (see Section 6.3). By using the matrices developed from the year 2000 field work, a particular MSZ can be risk and quality assessed for crowding. Through such risk and quality assessments, different management mechanisms will be identified and used to expand the zone potential by the calculated provision of additional resources, for instance lifeboats or lifeguards,. This will result in good management practices being developed. Therefore, to reduce the organisational barriers shown in Section 7.10-No - 2,

3, 4, 5, 6, 10, it will be vital for DCMS and their attached agencies to work in close collaboration with the DfT/MCA to ensure that marine sporting promotions cross-pollinate both laterally and vertically because DCMS also has a brief for tourism and culture (both of which this study has shown to impact on the CAS). This underlines the significance of the central government departments and sub-agents in assisting in the development of MSZ. Thus, DCMS is an important player in the development of a CAS management structure. SE as a sub-agent of DCMS also has a vital role to play in the CAS governance organisation structure because SE acts as the marine ambassador for the department. Section 7.2.1 described how SE has a primary role developing and maintaining the infrastructure of sport in England and how SE is also responsible for distributing National Lottery funds to sport. In addition, Section 7.2.1 showed that SE provides an overall strategic framework and sets national targets for key areas of activity adhering to the Government's own strategy as expressed in (DCMS, 2000) *A Sporting Future for All* and (DCMS, 2001) *The Government Plan for Sport*. These reports clearly confirm the way that sport, including CAS, is encouraged by central government.

#### **8.4 Department for the Environment, Food and Rural Affairs**



DEFRA has been shown by this study to impact on CAS in two particular ways, first by the production of Bylaws for LA in their management of CAS, such as sections 82-83 of the Public Health Acts Amendment Act 1907, Section 2.3.1, of the Public Health Act 1936. This is discussed in Section 3.7.4. The second is by the production of Planning

Policy Guidance (PPG) notes for LA. For example, PPG20 (1992), which refers to the capacity of the local environment to accommodate water-based recreation.

DEFRA's current aims and objectives show that the department functions under the central umbrella of sustainable development. The '*Seas of Change*' (DEFRA, 2002) consultation paper is a draft statement of DEFRA's marine vision of a clean, healthy, safe, productive and biologically diverse oceans and seas. It examines the practical application of an ecosystem-based approach and considers how stakeholders can be involved in the development of coastal and marine policy. The report emphasises the DEFRA ecosystem driven commitment to the marine environment. Because the CAS responsibilities of DfT and DCMS are undertaken through sub-agents and marine ambassadors for the departments, it is reasonable to advocate that DEFRA should also have a sub-agent and marine ambassador. This creates a well-proportioned and balanced structure and reduces the organisational barriers set out in Section 7.10, No - 2, 4, 6, 9, 10 and 21. More importantly, through the development of an ICZM strategy, organisational barriers such as Section 7.10, - 8 may be streamlined. It was noted in Section 7.10 that ICZM mediates stakeholder dialogue and hence provides a non-antagonistic information exchange model and a vehicle for the improvement of communication exchanges. This suggests that the ICZM internal department of DEFRA should act as a marine ambassador in relation to the CAS governance organisational model.

Chapter Four showed that three different types of geographical cluster can be identified in relation to CAS and that these need individually assessed management programmes. ICZM will be critical if these programmes are to be developed in a sustainable manner. The DEFRA role is to encourage sustainable development in the marine system through their ICZM section. The CAS governance organisation model should integrate these ideas of location based management and sustainable development and provide the 'sustainable

backbone' of regional CAS management systems by ensuring government commitment to sustainable development is met and that CAS management is *environmentally accountable*. For instance Section 5.4 discussed NGB memberships and showed that CAS participants had empathy with the marine environment - so much so that in the case of wave-powered CAS, the participants were more likely to be members of a marine related environmental pressure group than the known wave related NGB. DEFRA could increase grass root marine 'eco-information' by incorporating CAS as a 'management tool' into their strategic vision

## 8.5 Department for Education and Skills (DfES)



The DfES is identified by this study as having a special relevance for CAS for two reasons. First, because this study has shown that marine and maritime expertise is the primary cause of CAS organisational barriers and second, because it shows that by developing marine and maritime expertise these barriers would be reduced. Section 7.1.2.5 shows that all the stakeholders agree that education and skill training is a vital 'sustainability' element for the development of CAS management. The model shown in 7.1.1 emphasises how the current governance management organisational structure suffers from a lack of in-house marine and maritime expertise in many areas (DCMS, SE and LA). Without intervention, these poor communication exchanges will continuously impact upon CAS participants, because a CAS management model will be unable to achieve a sustainable status. This study has also shown that the CAS system is socially complex. Hence, CAS experts will need to understand marine-related social, economic and environmental protocols, especially the way that social landscapes complicate, frustrate, and impact upon the natural marine system. Thus, the development of 'single stranded' official sources of expertise is vital to

the CAS governance organisation model if sustainability is to be achieved. Section 7.10.2.1 shows that the current structure of marine and maritime expertise is uncoordinated and lacks the correct systemised facilitation modes. It is because of this that the DfES will be a significant factor in the development of repositories of marine and maritime expertise and the exchanges of CAS information at grass roots.

DfES was established to create social opportunity, release potential and achieve excellence for all; the department works in close collaboration with other government departments and cross-departmental bodies. Additionally the DfES aim is to develop an educated and more highly skilled workforce and to build a fair and inclusive society. This is critical to the development of CAS management because, as Figure 7.4 shows, in the governance organisation model there is some lack of marine and maritime expertise and this will create poor CAS management development. In conjunction with this the intensification of sport commitment by central government, and the growing popularity of CAS, will magnify the current CAS position and cause a greater need for marine and maritime expertise in all CAS impact areas. The types of expertise required to ensure that a CAS management system achieves sustainability are highly diverse and cover many disciplines, for instance ICZM, environmental accountability, management, planning, risk, transport, safety, and teaching skills.

Section 5.4 discussed the CAS participant profile revealed from the year 2000 field work and showed that participants in the CAS wind and human power categories had engaged in longer periods of instruction than their wave and fuel counterparts. It was noted that the high level of human related activity instructions may have been stimulated because swimming instruction is part of the National Curriculum. This clearly demonstrates how government initiatives operating through educational mechanisms can be used as a transferable trigger for CAS participant water safety awareness at grass roots. In contrast,

wave and fuel related activities (activities where instruction are not delivered through Government educational mechanisms) showed a higher proportion of respondents with no instruction. This is important because Section 5.2.3.1 clearly showed that during 1999 lifeguards at the Marazion site recorded numerous incidents relating to fuel powered craft where participants disregarded zone advice and endangered swimmers and other users. It was argued that this behaviour was linked to participants' lack of formal instruction, in that they did not know 'what' or 'where' a zone was. Of equal importance section 5.6 linked CAS participant lack of formal training and perception of ability to heightened perceptions of risk and also to occasions of verbal and gesticular hostility.

So it is important at this point to reflect again on the earlier discussion (Section 8.1) of how sub-agents operate as marine ambassadors for central government departments. It is also important that universities, colleges, institutions including schools are identified as the sub-agent/s for the DfES. This will produce equilibrium and a mechanism for structure assessment and ongoing sustainable development. Hence, universities, colleges, schools and alternative specialised institutions<sup>2</sup> could develop common marine/maritime related programmes. This will integrate, perpetuate and sustain CAS management systems by ensuring that cross collaborations within the governance organisation model are agreed by all sub-agents. Furthermore, the development of repositories of expert information will provide a greater expertise base for alternative or 'grass root' modes of CAS training. Clearly NGB would benefit from these types of expert resources, as would the marine/maritime and tourism/leisure industries. Thus DfES will assist in the expansion of expert marine and maritime knowledge and provide the primary channel for sustainable CAS growth.

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<sup>2</sup> Alternative Institutions such as the RNLI, who provides a residential college to improve specialist facilities.

Hence, the five Government Departments identified here as vital to an governance organisation model impact upon CAS in the following ways:

- ODPM Central and regional co-ordination of departments
- DEFRA Sustainable Development and Integrated Coastal Zone Management
- DCMS Marine Sport as a Catalyst for Social and Cultural Development
- DfT Marine Transport System Expertise and Development
- DfES Marine/Maritime Education and Skill Development

## **8.6 The CAS Governance Organisation Model**

Table 8.1 showed that the lack of marine and maritime expertise, and the blurred roles and responsibilities of CAS governance governance, have led to communications gaps which have caused ineffective or passive CAS management development. Supporting this, Chapters Five and Six also concluded that CAS sites are often congested or saturated which further emphasises the presence of unsustainable practices and ineffective CAS management at grass roots. Section 8.1 – 8.4 clearly defined the roles and responsibilities of the key management contributors to a CAS governance model.

However, because the CAS governance organisational model is a bureaucratic managerial structure and because it is engineered from a social perspective, a number of objectives will be required to allow the model to function. These are:

Objective One: To develop a CAS Governance Organisation Model (GOM) that will strengthen communication links between all levels

Objective Two: To provide a transparent structure that will demonstrate how a CAS GOM will develop marine and maritime expertise

Objective Three: To promote a safeguarding mechanism that will allow for the changes that will occur through ongoing monitoring and assessment

Figure 7.4 (repeated below as Figure 8.3) shows how the information derived from Chapter Seven translates diagrammatically into perceptible communication links and how CAS related information is passed through the different government departments.

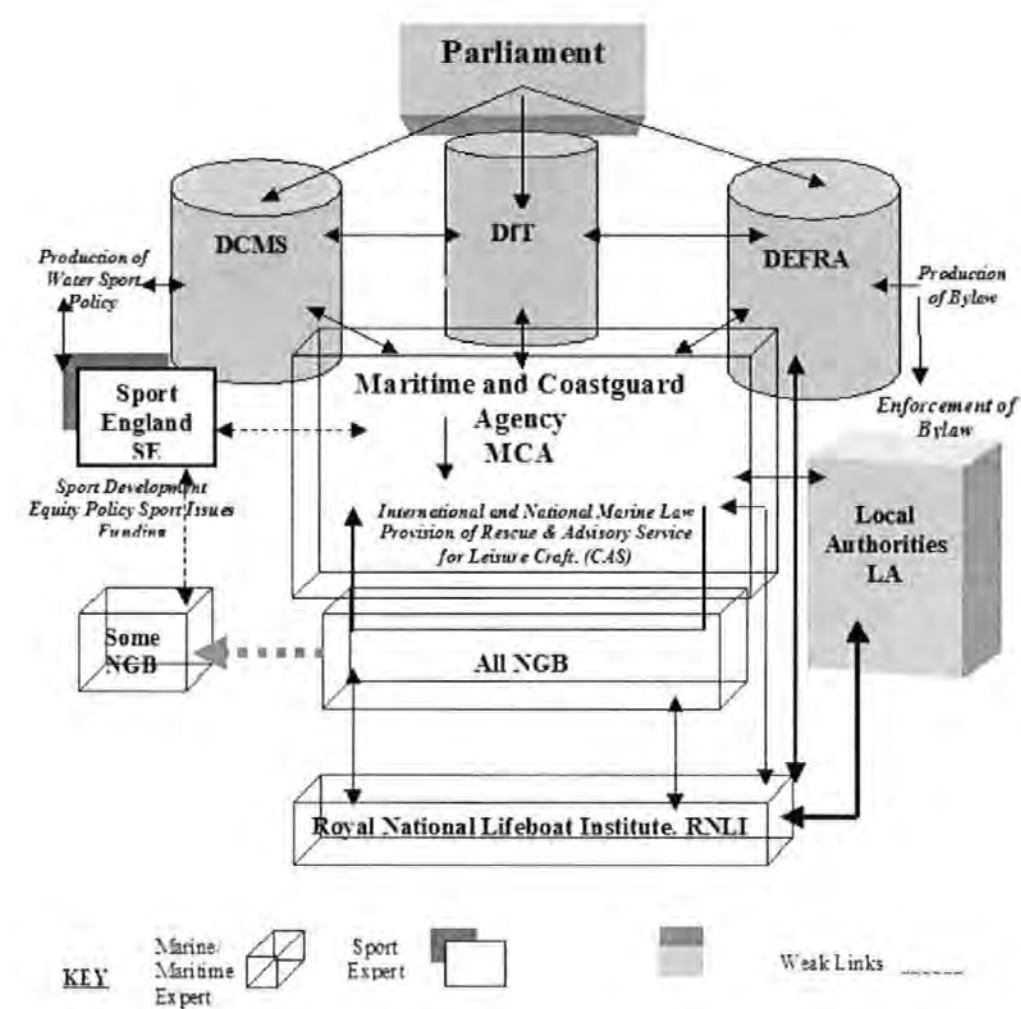


Figure 8.1 The (2002) CAS Related Management Information System

Although Figure 8.1 is attributed to the way that information has been interpreted by this study there is, none-the-less, evidence that the lack of an expert base has contributed to ineffective communication exchange. Therefore because the GOM model has been designed to overcome communication breaches it will look very different from Figure 8.1



and most importantly the model can be expressed through a three-dimensional form. Through this style of expression, the CAS GOM can be streamlined and yet still retain flexibility and hence encompass change. However an important point when interpreting the model described here is that the size of the blocks (representative of the identified CAS governance management organisations) indicates the potential of that department/organisation to influence CAS management initiatives. In addition the block size and available surfaces also indicate the capacity of that department/organisation to communicate at both upper management and at grass root levels.

Therefore, because decisions made by central Government will inform the model, Parliament must be the model pinion and directly below this are the nine departments of government. However because all nine of the departments of government are not required by this CAS model only the five identified earlier are discussed here.

The ODPM department is discussed in this work to act as a medium connecting the other departments. This is because this department houses the Regional Co-Ordination Unit and provides a robust method of cross-pollination, affording the model a mechanism that will encourage sustainable communications.

By removing the communication spaces that are evident in the earlier Figures (7.4 & 8.3) all the outlines of the model and the block surfaces are representative of active interface and communication linkages. Hence communications are unbroken and assist in the lateral and vertical continuity of all the management systems. This may improve the ability of the model to provide CAS management at grass root a sustainable source of executive governance.

This study identified five Government departments which are central to the development of a sustainable CAS management system. First is DEFRA because of the significance of sustainable development to international, European and national relations and to the

incorporation of an ecosystem approach. Additionally, and vital for this study, is the marine and maritime expertise that is developing through the DEFRA Integrated Coastal Zone Management section because this will provide DEFRA with a specialist sub-agent in the GOM and ensure that stakeholders that operate from the coast, (for example, marine and maritime services, such as repair facilities, managers and developers of commercial leisure activities or maritime transport providers) are included in the development of the model.

Of equal importance for the guidance of the development of CAS management are the two departments of DCMS and DfT; each of which has specific expertise and can provide significant detail to inform the overall management model. The specific CAS management marine/maritime expertise that should be available for grass roots through the DCMS is Marine Sport; this will impact upon sub-departments such as tourism development, social inclusion and DCMS ambassadors such as Sport England, or the UK Sport Council. In contrast DfT has expertise in MTS which can be developed through the MCA.

However the focal point of the model is marine and maritime expertise and this is critical if the CAS management model is to become sustainable. This study has shown that social structures are organic by nature and are therefore subject to change. Consequently a static system that has no facility for modification or expansion will eventually fail. Therefore, DfES will direct the mechanisms from which all types of marine and maritime expertise can be developed; this will provide a marine and maritime expert resource base that will stimulate the model by supplying the benchmarks for on-going assessment and evaluation. This will allow the modifications and adjustments that are required by social changes. The critical point here is that government decisions are based on incoming knowledge and thus this base must be developed evenly if any type of marine social system is to evolve in a sustainable manner. If the balance of knowledge is uneven then defective processes will begin to erode some of the social strands resulting in unsustainable practice. For instance,

this study shows that the government 'Sport for All' initiative encouraged an upsurge of the population's interest in CAS. However, the CAS practices confirmed by Chapter Five and Six of this study provide the evidence that the lack of integration between government departments unbalanced the system and conflict occurred because CAS management structures had not been fully in place at grass root to support the initiative. For instance, the year 2000 field work revealed that a significant majority of CAS participants have encountered hostility when they have been participating in their activity and that multi-use CAS locations are often saturated (see Chapter Six). Therefore with these pointers directing the development of the CAS GOM the model (shown in Figure 8.4) is developing with clear channels of communication and is balanced.

Therefore the depth of the model can be increased by including the four sub-agents for the four Government Departments which are (DfES)-universities, colleges, schools and institutions, the (DfT)-MCA, (DCMS)-SE and (DEFRA)-ICZM section.

Section 7.6 emphasised that LA are an important component of CAS management primarily because the LA provide many of the grass root management arrangements for CAS participants. However, the year 2000 field work showed that a significant majority of CAS participants did not recognise CAS in situ management structures or any arrangement that was designed for the management of CAS. For instance, during the 1999 LA data collection, written observations by LA Lifeguards patrolling Marazion beach noted verbal harassment from jet-skiers who had disregarded LA advice with regard to the provided zoned area (Section 5.2). This clearly indicated that the in situ management structures were not functioning effectively because conflicts between the participants of CAS activities were noted to be prolific. Section 7.9- 28, 29, 30 all show that LA contains organisational barriers and that these are restricting the development of CAS management practices. These organisational barriers are related to the lack of in-house marine and

maritime expertise and poor communication systems (see Chapter Seven) which are interrelated to issues discussed in Section 8.1. Therefore, a Governance Organisational Model (GOM) must ensure that LA are fully integrated into all aspects of the management structure and communication processes if grass root CAS management is to function in a sustainable manner.

LA would be illustrated as a central core in a three dimensional model and therefore hidden from view in the model. However, they are a central mechanism that drives through the very centre of the model from bottom to top and are thus a strategic component of the overall GOM process. In their position within the model LA have interfaces with all Government Departments and their identified sub-agents and through the current education system LA already have links into the DfES sub-agents. LA can therefore operate at both governance and grass-root levels. The strategic position of LA is also extremely important to the overall construction of the model because the sub-agents are identified by this study as the sustainable means for the development of single stranded marine and maritime expertise systems. Therefore by clearly understanding the roles and responsibilities of the ICZM section of DEFRA the MCA and SE, LA will be able to draw from these resources and develop in-house marine and maritime expertise and in turn sustainable CAS management strategies.

Section 7.10 discussed the way that NGB are significant for the development of a sustainable CAS model, first because NGB act as a catalyst for marine and maritime expertise and, second, in their capacity to engage with CAS management systems at the grass root level. For instance, there was clearly a problem with NGB functioning effectively at grass root level because the year 2000 field work (Chapter Five) revealed that a significant majority of CAS participants held no membership with their relative NGB and also a significant majority perceived that the Sports Code of Practices for individual CAS

were inaccessible at grass roots and therefore ineffective as a management tool. The important point here is that NGB are recognised by Government to be a vehicle for the dissemination of SCP and thus their interface with the grass roots is vital.

Section 7.10, Numbers - 2, 5, 6, 9, 10, 16, 21, 23, 24, 30,33 all show that NGB have developed organisational barriers that are restricting their ability to function effectively as part of the CAS management structure. A number of these barriers are directly linked to the GOM and therefore the GOM will require adjustment to integrate in a sustainable manner with NGB operations. One organisational barrier that impedes the development of NGB is the lack of government official recognition of some NGB which is aggravated by NGB economic drivers and the stage of their overall development.

However, this study suggests that a single strand mode for CAS education and training is achievable through the DfES sub-agents (universities, colleges, institutions and schools). Thus, if NGB 'repositories' of marine and maritime expertise are developed in partnership with DfES sub-agents this will provide the GOM model with a robust mechanism that will enable NGB to function effectively as a component of the GOM and contribute to a sustainable CAS management system. The communication links that are present at every interface, and that exist between central government departments and their sub-agents, will also provide NGB with a way of streamlining their communication systems, which will also assist in the development and joining up of sustainable CAS practices. Furthermore, if partnerships are developed between NGB and DfES sub-agents this will create the favourable conditions that will stimulate government recognition and approval of individual NGB. In conjunction with these benefits the availability of robust forms of marine and maritime expertise for an NGB at an embryonic stage of development; will guide and direct maturity. Thus, NGB and alternative forms of maritime expertise (such as clubs, professional bodies, and commercial enterprises) will provide the GOM with a

network of individualised repositories of CAS marine expertise which will enhance CAS management development at grass root because it will interact dynamically with the GOM model and especially with the DfES.

The third objective set out in Section 8.5 emphasised that the GOM would need a safeguard mechanism or a buffer, which will allow for the changes that occur are needed as a consequence of ongoing monitoring and assessment. Furthermore, because this model is socially engineered, a proviso must be made to ensure that grass root actions are effectively communicated at all levels. In particular attention must be given to CAS participants that have no direct interaction with any components of the GOM - for instance CAS participants that are not members of a NGB or do not use marine locations with supportive resources such as lifeguards or signage. These participants have been shown by this work to affect grass root CAS management systems because they are likely to have no formal instruction and are potentially dependant on information passed on from informal sources and, hence, their existence must be included into the GOM model. Therefore this Section will illustrate how the GOM will achieve the third objective.

The model representation includes the four Government Department sub-agents and the DfES extends deeper than its counterparts that represent the MCA, SE and the ICZM section of DEFRA. This is because the DfES sub-agent is identified by this study as providing a primary resource for repositories for marine and maritime expertise. Expertise repositories include the expertise that is derived from all other marine and maritime expertise resources, such as central government departments and the MCA, SE, RNLI, LA, NGB. Additionally, because of the DfES sub-agent, all modes of marine and maritime education and training can derive from a single strand mechanism which will in turn provide the GOM with a sustainable CAS management instrument.

However it is important that the MCA, ICZM section of DEFRA, LA and SE also have independent communication channels into other marine and maritime expertise mediums and vice versa. For example, the LA or the MCA should have the ability to directly communicate with NGB or the RNLI. This is described here as model pillars that will provide the direct communication channels from the MCA, ICZM, SE and LA into the marine and maritime expertise individual sources such as NGB.

In conjunction with these communication channels the GOM has allowed for the influences of the actual marine environment, because this will act as the safeguard mechanism for the overall model. It allows for CAS participants that have no direct interface with any part of the model to be represented, such as those participants who have never taken part in CAS or who have no connection with an NGB or a club and have no understanding of the marine environment or its management structures. These types of CAS participant will influence the ability of a grass root CAS management structure to become or remain sustainable. It is important to the GOM, therefore, that a representation of the actual marine environment is incorporated into the model because this will include all the CAS participants inclusive of those who do not have the fundamental knowledge of the way that it is socially arranged.

This representation of the actual marine and maritime environment is identifiable as being in the space that exists between the four sub-agents of central government and the individual forms of marine and maritime expertise such as NGB. Furthermore the communication pillars between the MCA, ICZM section of DEFRA and SE run directly through the representation of the actual marine and maritime environment and these link to the individual forms of marine and maritime expertise. These direct interfaces are important because they demonstrate how even short intense communications can still

infiltrate CAS grass root marine and maritime management structures, for example LA newsletters or special marine and maritime events.

Direct 'expertise' interfaces can also be expressed visually in the GOM. For example, the 'block' or interface size can also represent the probability of a government department, a sub-agent or an alternative source of expertise penetrating the actual marine and maritime environment. The current educational system suggests that Universities, Colleges, Schools and Institutions have the greatest probability of coming into contact with potential and actual CAS participants. Additionally, because Universities, Colleges, Schools and Institutions have such robust public interfaces they also have the greatest opportunity of developing sustainable routes for the dissemination of CAS Sports Codes of Practice. In addition Universities, Colleges and Schools also provide the optimum location for repositories of marine and maritime expertise because there is the presence of active research, which provides the information for CAS expertise update and assessment procedures.

In parallel to this the GOM must also demonstrate fluidity in that it must adjust to incoming data such as social change, legislation and government policy. The following section will discuss this point.

The communication processes in the model are transparent because the interfaces that provide the 'representative shape' for each of the GOM components are all communication interfaces. However although the LA are 'seemingly' hidden from view they are described earlier in this chapter as, a multi-interface internal mechanism that runs through the whole model.



Hence, a static model will not reflect a realistic flow in the dynamics that are associated with developing communication processes. This is especially because of temporal influences and also because social structures are not static but organic by nature. The model must therefore incorporate a way to overcome these social affects.

By incorporating these concepts the model becomes dynamic and is placed on a continuum time line, describable as a model 'reflection'. Thus, in a similar fashion to organic structures, the GOM can adjust to incoming information from the actual marine and maritime environment and can analyse and absorb changes into itself whilst still maintaining both horizontal and vertical communication exchanges. For instance, information generated by Parliament will be communicated through the model and impacts such as incoming regulations, research or social change will be absorbed and inform the various marine and maritime repositories of expertise and/or active information components of model. These in turn will analyse and indicate the need for, and suggest the methods required for, sustainable model adjustment before these suggestions and recommendations return to Parliament for legislative action. These processes are reiterative. This type of GOM will provide direction for ongoing developments of sustainable CAS management at grass roots, the resources for developing marine and maritime expertise and the medium for transparent communication between organisations; this will develop sustainable CAS management practices.

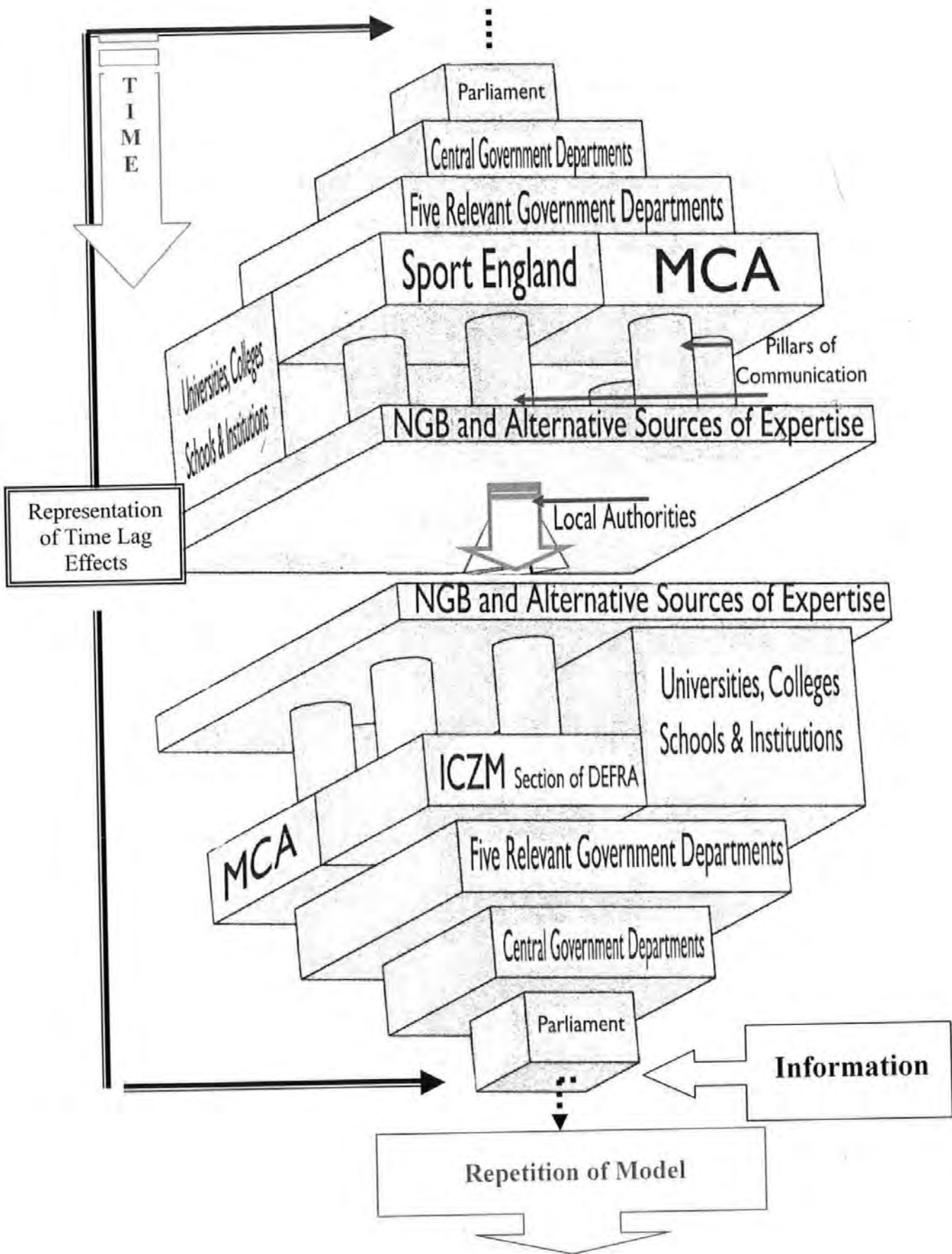


Figure 8.2 Time Dynamics of a Continuous Governance Organisation Model (GOM)

## 8.8 Summary

The year 2000 field work concluded that CAS saturation levels are being reached and often exceeded in Cornwall and that participants of CAS are unlikely to embrace CAS management structures. However, collectively the information derived from Chapters One to Three, the 1998 pilot study, the 1999 LA data collection (see Section 4.4) and the year 2000 field work all indicated that organisational barriers exist within the arrangement of bodies that has an interest in CAS.

Chapter Seven examined the underpinning CAS governance configuration. Through the identification and articulation of the responsibilities of central and local government and its agencies and the role of non-governmental organisations, the structure of CAS management communication processes was examined and the existence of barriers within and between the bodies that have an interest in CAS was identified. This provided the basis for an evaluation of the overarching governance structure of CAS and led to the development of an integrated model that would identify and define a clear CAS governance organisational structure. This in turn could be used to underpin the development of individual CAS grass root management models.

Chapter Eight began to construct a governance organisational model for CAS and this was based on a close examination of the issues and barriers identified from both the work carried out during the year 2000 field work and the year 2002 governance stakeholder consultations. By examining in detail the issues and barriers affecting the sustainable development of CAS as well as the potential positive management mechanisms identified by the stakeholders during the stakeholder consultations, an analytical understanding was developed which was used to guide and underpin the GOM construction. This model provides CAS managers and individuals at grass root with clear definitions of the governance and management processes required to support the sustainable development of

CAS. For instance, through the implementation of the recommendations implicit in this model the grass root management matrices derived from the year 2000 field work data (Chapter Six) will function at a higher level because the distribution of resources will be optimal. Thus, the GOM will remove or reduce the overarching management organisational barriers/issues and assist the development of sustainable CAS management practices at all levels.



Figure 8.3 Flow Path of a Sustainable CAS Management Process

Figure 8.3 demonstrates a ‘flow path’ of positive actions that would go some way to increase the quality of experience by reducing CAS participants’ perceptions of risk when taking part in CAS activities. It will be important that the overarching governance framework is identified by coastal managers, because sustainable management strategies/practices can not be developed for action at grass roots without first understanding clearly what governance direction and guidance is provided for.

## **CHAPTER NINE:**

### **CONCLUSIONS AND RECOMMENDATIONS**

#### **9.1 Reflections on the Previously Discussed CAS Issues**

This study has thoroughly examined Coastal Aquatic Sports and this has shown that the growth of CAS is challenging the aim of sustainable coastal zone management. Chapter Two discussed how the social value assigned to the natural environment makes that environment a human resource, possess human value then develop into exchange value and become a commodity and how the associated economic drivers aggravate the natural/social polarisation.

Chapter Two also discussed how sport operates in various roles. Some of these are perceived as beneficial to society (for instance the relationship between sport participation, good character, achievement and motivation and how sport can achieve social integration. This is evidenced because this study also discussed the ways that central government has promoted 'Sport for All' initiatives through their sport agencies. These initiatives are designed to encourage all members of society to actively take part in sports.

The character differences between the participants of different sports create complexity and, in particular, CAS activities are socially multifaceted. Section 2.3 discussed how sport that takes place in the natural environment has special attractions and how these link to participant psychology and motivation, which further links to the government sport drivers such as 'Sport for All'.

The government sport drivers and the emergence of Coastal Aquatic Sport culture also provided the opportunity for an 'exchange value' to be associated with the natural marine environment, which has stimulated the commodification process and which in turn has prompted intensive economic activity. Section 2.8 discussed how CAS activities have also created a 'special attractor' for tourism and how this has caused the coupling of sport to tourism. This was important to this study because sport and tourism contain a number of opposing fundamentals. CAS has been employed as a mechanism for personal development and contains important social dimensions. In contrast, tourism is multi-faceted and, as a service industry, it encompasses economic drivers. Tourism benefits are discussed in Chapter Two in relation to the way that they provide a diverse range of economic benefits for local economies. However, in contrast, tourism was also discussed in relation to the way that it can consume resources, create waste, demand specific infrastructures and, as a multi-faceted industry, become almost impossible to control. These negative tourism impacts are identified in Chapter Two as aggravating the development of CAS grass root management structures.

Chapter Three discussed how CAS activity-related social issues are compounded by the culture and cultural relationships and how these relationships can, under special conditions; create coherence and power groups which in turn can become complex and cause territorial and hostile behaviours to emerge. These negative cultural relationships are further shown by this study to permeate the CAS landscape, creating some of the complications in the development and progression of CAS grass root management structures.

Section 3.1 also identified some of the conflicts that are observed in the CAS landscape. Through careful analysis of data derived from Local Authorities in 1998 a number of

hypotheses were made. These suggested that some CAS locations were becoming overcrowded and that observable conflicts were clearly indicating that saturation levels were being reached or exceeded. In addition a hypothesis was established that suggested that some CAS mixed activities are in fact incompatible and should not take place in the same waterspace at the same time and that the levels of experience that a CAS participant had achieved partly determined compatibility ideals. These observations addressed the field situation (theme (i)) and stimulated the stage one sub-section three study aim, which was to identify the compatibility levels for the coexistence of certain sports and the carrying capacity for these activities that can be attached to locations in the coastal environment. The data were shown to have a role in the effective waterspace management for multi-use aquatic sports and recreation, and in informing future coastal management and planning.

Chapter Three also examined the cascade of UK coastal planning and regulations as well as the wide variety of CAS management providers that are guiding CAS development. For example, Central Government (Planning Policy Guidance notes), Local Authorities (Bylaw control mechanisms), Government Agencies, such as the Maritime Coastguard Agency and Sport England and other interested bodies such as National Governing Bodies. Also examined was the impact of European strategies such as sustainable development and the movement towards Integrated Coastal Zone Management. Section 2.7 showed that a large CAS participation increase has occurred during the 1970s and 1980s and although this growth was partly stimulated by the Sport for All initiative, it is apparent from the evidence provided by the 'Select Committee Report' detailed by the Environment Committee (1992) (section 3.6) that the correct mechanisms for the integrated management of this initiative were not in place at that time. For instance, it was evident from Chapter Three that poor management structures have evolved due to the limitations of LA Bylaws as management tools. Additionally, the

promotion of CAS via a cascade of different and occasionally conflicting bodies such as the Sports Council, National Governing Bodies, MCA and Local Authorities was considered to be inappropriate and that this 'governance mix' may have served to frustrate management initiatives in the field situation. Hence, it was important during Stage One Sub-section Three to identify what participants of CAS perceived to be 'effective' management structures because this would reflect upon the effectiveness of the CAS governance framework.

Chapter Four discussed the mixed method (qualitative and quantitative) design that was used for this study and the fact that this method is noted to be akin to intra-method triangulation. Section 4.2 reviewed the way that the research design strategy was used as the underpinning framework in that it employed a structured and layered analytical approach. The aims and objectives of both Stage One 'field situation' and Stage Two 'governance' were then discussed in Section 4.4. This described how the Stage One aim and objectives had developed from the information derived from the literature review, the 1998 pilot study and the 1999 LA data collection, whereas the aim and objectives of Stage Two (theme (ii)) had also developed from these sources but had developed to a greater degree because of the additional information made available from the results of the year 2000 survey. Section 4.7 clarified the methodology, design instruments and operational definitions of the quantitative and qualitative survey that was used for the 1998, the year 2000 fieldwork and the research carried out in the year 2002 governance work. Additionally, Section 4.7.4 discussed the question design instruments and their limitations, for instance, question order. The cluster method that was used to identify year 2000 fieldwork sample sites was explained in Section 4.4 and also discussed were the selection procedures. The year 2002 governance interviews were also discussed and the criteria that were employed to select the CAS governance representatives were detailed. Section 4.9 identified the selection and use of statistical tests for quantitative



data analysis and discussed why the Statistical Package for Social Scientists was selected as the optimum tool for the analysis of the collected quantitative data. Section 4.10 identified the qualitative methodology that was used for the analysis of the year 2002 governance surveys.

Thus rigour is shown to have been applied to the methodology of both the (i) field situation and (ii) the CAS governance structure. It was perceived that this would provide a clear framework for reference with regard to conclusions and recommendations relating to the field situation and CAS governance in relation to coastal management.

Chapters Five and Six discussed the results of the Stage One (i) year 2000 fieldwork and provided an insight into issues associated with CAS participants in the 'field situation', their understanding of pertinent CAS issues, the location of CAS, the nature of CAS activities and coastal loading. The methodology identified 12 specific CAS activities (those discussed individually in detail in Chapter Two) and these were further classified into four categories determined by the craft propulsion type, i.e. fuel, wind, wave and human.

The same fieldwork data showed that from CAS perceptions, specific character profiles can be attached to CAS participants from different activities. For instance, Section 5.4.3 showed that participants of wave powered activities are younger than other CAS, are more likely to choose an affiliation with an environmental organisation rather than their NGB and are statistically more likely to have been involved in, or responsible for, a collision. The last mentioned point emphasised that wave craft are more likely to be in saturation zones. The 'quality of time' derived by CAS participation in activities by participants was shown by Section 5.5.1 to be entrenched in motivational elements, for instance, individuality, culture and escapism.

Examination of the associated 'quality' factors showed that other CAS participants' attitudes and abilities and the perceived overcrowding of a location were regarded to be a high priority by a statistically significant majority of the participants. The results also showed that the levels and type (gestural, physical) of hostility increased with the self perceived ability of the participant and were a common occurrence. These points further consolidated the conclusion that CAS saturation levels were being reached or exceeded in some CAS locations.

The year 2000 fieldwork results (Section 5.6.1) also showed that CAS participant perception of risk is heightened when they interact with others, especially when they perceive others to be of a lesser ability, and or using a different craft. This also indicated that saturation is occurring in some CAS locations. However, because the result was paradoxical, in that socialisation is perceived to be a desirable sport motivator, this led to the suggestion that it is the risk that is associated with CAS participant interaction that is undesirable. This indicated that there was a relationship that could be determined by participant numbers and the available waterspace.

Chapter Six showed that through the analysis of the perceptions of CAS participants to each of risk and quality of experience this work was able to ascertain compatibility levels and these could be linked to ability (beginner, intermediate and experienced). This allowed for the generation of compatibility matrices which could be used by coastal managers to prepare individual management programmes for all locations but especially those that are CAS multi-use sites. The matrices could provide coastal managers with a method or act as a tool for assessing the saturation levels of CAS sites and this would allow a benchmark for the allocation of management resources, such as lifeguards, information boards and similar.

However the results of the Stage One (theme (i)) also showed that many of the management structures that govern CAS were not understood or recognised by the majority of CAS participants, therefore the hypothesis which suggested that the development and perpetuation of poor CAS management practices was caused by ineffective CAS grass root management arrangements was cultivated further. This was because evidence suggested that the problem was instigated by the lack of a clearly defined overarching CAS governance structure. This stimulated Stage Two of the study (theme ii 'governance') and the second aim, which was to examine the overarching governance of CAS, it was perceived that by doing this the cost/benefit relationships between CAS governance and the actual CAS field situation could be identified.

Chapter Seven detailed an examination that took place in the year 2002 of the underpinning CAS governance configuration. This assessed the responsibilities of central government, their attached agencies, and other external organisations and identified the marine and maritime coastal stakeholders that have an interest in the governance of CAS, it also assessed the awareness of the marine/maritime stakeholders of the current government management initiatives and structures and assessed their awareness/knowledge of CAS regulation, control mechanisms and their governance.

The identification of both the responsibilities of central and local government and its agencies and the role of non-governmental organisations allowed the structure of CAS management communication processes to be examined and organisational barriers revealed. This led to an evaluation of the overarching governance structure of CAS which in turn helped the second aim of the study to be achieved by providing a foundation for the development of a CAS governance organisational model.

Analysis of the year 2002 field work (governance interviews) showed that a number of issues and barriers existed (outlined in Section 7.9) and that these could be grouped under three specific headings and the individual issues structured into a hierarchy; (i) Lack of Marine Expertise, (ii) CAS Organisations' Blurred Roles and Responsibilities and (iii) Breaches in Communication between CAS Organisations. These barriers and issues could also be linked to grass roots management initiatives such as National Governing Bodies (NGB), Sport Codes of Practice (SCP), Zoning and CAS Self-Regulation.

The main organisational barrier in the CAS landscape is the lack of in-house CAS marine and maritime expertise in many of the organisations that govern CAS (shown in Section 7.10). The effects of this barrier were exacerbated by the organisational confusion which exists with respect to individual governance roles and responsibilities for CAS, and these in turn cause breaches in communications. Chapter Seven therefore concluded that organisational barriers existed within the arrangement of bodies that have a governance interest in CAS and that these were frustrating the development of a sustainable CAS management system. This clearly supported the data and discussions in Chapters Five and Six which concluded that CAS sites are becoming congested and saturation levels are being exceeded and that the management of waterspace was not functionally effectively in the field situation.

## **9.2 Conclusions**

The analysis of the data collected on CAS participant perceptions during the Stage One sub-section three (year 2000 fieldwork) showed that three specific issues were aggravating the sustainable development of CAS and these were linked to Government CAS policy and management structures, National Governing Bodies and the individual Sports Codes of Practice. These in turn could be measured from different perspectives, location, activity, CAS

participant perceptions and most importantly through coastal loading. An understanding of coastal loading is extremely important because it could act as a management tool in that it can indicate saturation levels to coastal managers'. The study revealed that CAS participants produce statistically significant similar perceptions with regard to the numbers and types of alternative CAS interactions that they perceive as being compatible to their activity. By using the CAS participants' perceptions relating to risk and safety, the relationships could be used as an indicator to assess coastal loading. Further testing showed that CAS participants could also identify their compatibility ideals based on their perceptions of other CAS participants' abilities.

Four compatibility matrices were developed from the information generated from the analysis of the year 2000 fieldwork and these matrices provide coastal managers with a tool to assess the social carrying capacity attached to a CAS environment. By using this tool CAS managers can identify congested or saturated CAS sites and optimise resources through the development of a unique CAS site-specific management plan. This will decrease CAS participants' perception of risk and increase their perception of CAS 'quality'. These positive outcomes will serve to perpetuate the government agencies' 'Sport for All' initiative and ensure that good management practices are developed.

To assist coastal managers to refine or specialise management resources for different CAS sites (for example, beginner only zone) the first three compatibility matrices are determined by the different abilities of the participants (beginner, intermediate and experienced). Matrix Four however, is a maximum view with accumulated totals of all the different abilities. This matrix indicates when saturation levels are such that management intervention (such as the

allocation of resources) is required to ensure that CAS participants’ perceptions of risk are not heightened.

Beginner	Human	Wave	Wind	Fuel
Swimmer	3	1	0	0
Body board	1	2	0	0
Short board	0	1	0	0
Long board	0	1	2	0
Windsurf board	0	0	1	0
Sailboat	0	0	1	0
Canoe	1	0	1	0
PWC	0	0	0	0
Powerboat	0	0	0	0
Sub-Aqua	2	1	0	0

Intermediate	Human	Wave	Wind	Fuel
Swimmer	5	3	1	0
Body board	2	4	0	0
Short board	1	3	0	0
Long board	1	3	2	0
Windsurf board	0	0	2	0
Sailboat	0	0	2	0
Canoe	1	1	1	1
PWC	0	0	0	1
Powerboat	0	0	0	0
Sub-Aqua	0	0	0	1

Matrix One:  
Classification of CAS Participants Perceived Number of Beginner Alternative CAS Participants Desirable in a Football Pitch Sized Water Area

Experienced	Human	Wave	Wind	Fuel
Swimmer	7	5	1	1
Body board	3	6	1	1
Short board	2	5	1	2
Long board	1	4	2	2
Windsurf board	1	0	3	2
Sailboat	0	0	1	1
Canoe	1	1	2	2
PWC	0	0	0	2
Powerboat	0	0	0	1
Sub-Aqua	5	3	0	1

Matrix Two:  
Classification of CAS Participants Perceived Number of Intermediate Alternative CAS Participants Desirable in a Football Pitch Sized Water Area

Maximum	Human	Wave	Wind	Fuel
Swimmer	15	9	3	2
Body board	6	12	3	1
Short board	4	9	2	3
Long board	2	7	5	2
Windsurf board	1	1	6	2
Sailboat	0	0	3	1
Canoe	3	2	4	3
PWC	0	0	1	2
Powerboat	0	0	1	1
Sub-Aqua	11	4	1	1

Matrix Three:  
Classification of CAS Participants Perceived Number of Experienced Alternative CAS Participants Desirable in a Football Pitch Sized Water Area

Matrix Four:  
All CAS Participants Perceived Number of Experienced Alternative CAS Participants Desirable in a Football Pitch Sized Water Area

Table 9.1 CAS Coastal Loading Compatibility Matrice for Coastal Managers

The conclusions provided by this study indicate that in order to minimise risk and increase safety Local Authorities and other Coastal Managers need to employ a social and physical related carrying capacity management system to assess sustainability of a CAS site and to optimise their management resources.

The results from the year 2000 fieldwork also showed that some of the fundamental elements of the non-commercial maritime overarching management system are not functioning in an effective manner and that this was having an impact upon the development of sustainable CAS grass root management practices. Additionally it became apparent that before a sustainable CAS management system could develop effectively in the field situation, an evaluation of the overarching governance structures of CAS was needed in order to examine the structure of the current CAS management communications processes and the perceptions of officers of CAS governance responsibilities. The data drawn from this examination underpinned the CAS governance organisational model and the conclusions it represents.

The results of the qualitative interviews that took place in 2002 with identified CAS stakeholders provided vital information, such as an assessment of the CAS responsibilities of not only central Government and their attached agencies but also of external organizations. Additionally, an unraveling exercise could take place concerning the perceived 'mesh' of CAS related coastal planning. This helped to expose many of the complexities that are associated with the CAS multi-functional system. Furthermore the results showed that the sustainable management of CAS is linked to many associated coastal physical and legislative developments and that these need to be placed under an umbrella of 'sympathetic management'. The consultation examination provided the study with a number of stakeholder recommendations to assist in the development of a CAS sustainable management model. However analysis of the data also identified 41 organisational barriers and issues associated with the overarching CAS management structure and these were concluded by this study to have contributed to the development of unsustainable CAS management practices because 'issues' were re-emerging at grass roots levels. For instance, there were weaknesses in the overarching governance and CAS management of marine and maritime expertise, a blurring of

roles in the governance organisation and breaches in the communication between CAS governance representative organization. Additionally the barriers and issues could also be linked to the operational grass roots management initiatives such as Sport Codes of Practice, Zoning and Self-Regulation.

However, analysis of the CAS governance consultations (2002) suggested processes by which organisational barriers (outlined in Section 7.10.) could be addressed and a sustainable governance management model for CAS developed. These processes include,

- The Development of Marine Expertise by Education and Training
- Clearly Defined CAS Organisational Roles and Responsibilities
- The Development of a Sustainable CAS Communication Systems
- The Development of Sustainable CAS Management Practices

Chapter Eight describes a pragmatic organisational model for CAS governance with a strong and integrated structure which is developed from all the information generated in this study especially that from the CAS governance representatives. The model addresses the development of in-house CAS marine and maritime expertise and provides clarifying definitions of CAS organisations. Chapter Seven (Figure 7.1) showed that three government departments and two of the government agencies promote CAS governance. However, this study shows that for the sustainable development of CAS five government departments will need input into CAS governance. Each of these departments act as CAS governance agents and they can be arranged in a framework that will develop a CAS integrated governance organisation model. Furthermore, Chapter Seven, Figure 7.4 showed that government departments' attached agencies (MCA and SE) carry out the roles and responsibilities in relation to CAS. However Figure 7.4 also showed that the autonomy of these agencies clearly



unbalances the visual representation shown. Therefore, this work redefined the agencies and interdepartmental assemblages to improve their integration with other government systems and to create a balanced final governance and management model.

By developing the knowledge gleaned from the 2002 stakeholder interviews, careful processing of the identified barriers/issues and the inclusion of stakeholder recommendations, a time dynamic Governance Organisational Model (GOM) was constructed and this is repeated below. Because the GOM model is both three dimensional and dynamic a representative computer graphic could better be used to clearly demonstrate the flows in the communication processes between the different departments. This graphic would also show how the management of the 'field situation' could also be positively affected by these processes with regards to the upgrading of management strategies to absorb the impacts of change.

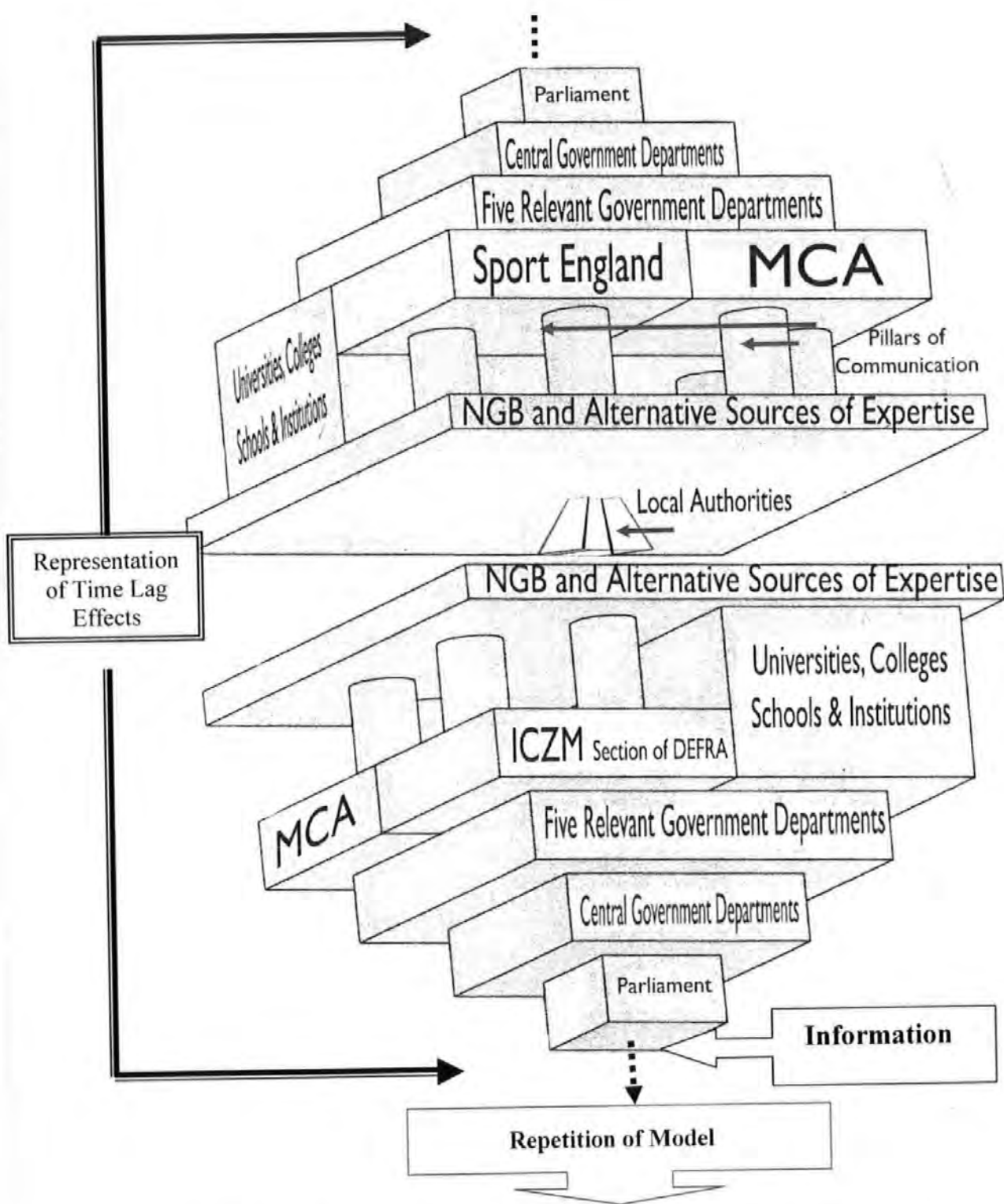


Figure 9.1 Time Dynamics of a Continuous Executive Organisation Model (GOM)

### **9.3 Recommendations**

Hence it is recommended by this study that the features represented in the GOM model described in Chapter Eight are implemented to underpin and guide the development of CAS sustainable management practices at grass root. The implementation of the GOM will remove or reduce organisational barriers/issues and assist the development of sustainable management practices. Additionally the GOM will provide a clear definition of the roles and responsibilities of CAS governance organizations for managers in the CAS field situation and this in turn will assist the streamlining of vertical and horizontal communications. The positive outcomes linked to the implementation of the GOM model are:

- Implementation of GOM
- Sustainable Marine and Maritime Expertise
- Roles and Responsibilities of CAS Organisations Clearly Defined
- Streamlined Communications Vertical and Horizontal
- Sustainable CAS Grass Root Management Practices

This will assist coastal managers to develop location specific CAS management strategies and allow the matrices discussed earlier to function at a higher level. This will provide benefits to participants in CAS because these actions will lead to the decongestion of CAS sites; the elimination of conflict and confliction; an increase in CAS participants' perception of sport quality and a reduction in CAS participants', perceptions of risk and assist in the development of sustainable CAS management. In parallel these action will also encourage participation and go some way to continuing the 'Sport for All' initiative.

#### **9.3.1 Further recommendations**

Chapter Seven highlights in *italics* and lists (Section 7.10) the important factors identified by this research as affecting the sustainable development of CAS. From these conclusions the following recommendations for further research can be made.

1. Research into the development and management of a commonly accessible sustainable non-commercial maritime transport information system.
2. Research into how European directives and legislation will in the long-term affect the UK development of a non-commercial maritime information system.
3. A cost-benefit examination of the introduction of a single voluntary marine licence.
4. An examination of CAS 'risk and accountability' linked to CAS participation and management structures, in order to develop a strategy for minimising the impact of risk and accountability upon the sustainable development of CAS management practices.
5. Research to explore the implications and impacts on CAS participation allied with the development of a UK maritime policing body.
6. Research into the development of robust methods for the statistical recordings of CAS impacts and trends. For example, indicators to measure the effectiveness of sport codes of practice, impacts of tourism and associated economic linkages.
7. Research to increase the capacity of education and training mechanisms by exploring the structure of CAS education and training and the development of facilitation modes
8. Focused research into the global development of individual CAS with relation to take-up, participant profiles especially gender and culture

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## **Appendix One**

### **1:1 Questionnaire Design Fieldwork 2000**



LOCATION .....  
WEATHER .....

DATE .....  
CONDITIONS .....

1. What is your principal aquatic sport?
2. Would you classify yourself as a  
Beginner [ ] Intermediate [ ] Experienced [ ]
3. Approximately how much formal instruction have you received in your aquatic sport?  
None [ ] Hour/s [ ] Day/s [ ] Week/s [ ]
4. How long have you participated in your aquatic sport?
5. How often do you participate in your aquatic sport?  
Times per week [ ] Times per month [ ] Times per year [ ] Other [ ..... ]
6. Would you classify yourself as 'local' at this aquatic sport location? Yes [ ] No [ ]

7. What are the qualities that you get out of participating in your aquatic sport?  
After considering each of the following statements please answer by indicating your response from the options on Card A.

		SA	A	UD	DA	SDA
7:1	It is 'escapism' from daily routine	[ ]	[ ]	[ ]	[ ]	[ ]
7:2	I enjoy being with others with similar interests	[ ]	[ ]	[ ]	[ ]	[ ]
7:3	I enjoy competition	[ ]	[ ]	[ ]	[ ]	[ ]
7:4	It is healthy exercise	[ ]	[ ]	[ ]	[ ]	[ ]
7:5	I enjoy the associated culture	[ ]	[ ]	[ ]	[ ]	[ ]
7:6	I achieve personal satisfaction	[ ]	[ ]	[ ]	[ ]	[ ]

8. Card B displays factors that have an effect on participants of Coastal Aquatic Sports.  
Can you scale the importance of these factors to you when you participate?

	IMPORTANCE	No	V-Low	Low	Medium	High	V-High
8:1	Other people's ability	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
8:2	Other people's attitudes	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
8:3	Weather & sea conditions	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
8:4	Other peoples craft	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
8:5	Overcrowding of site	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
8:6	Visual environment	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
8:7	Friends	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
8:8	Personal equipment	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

9. (Card C) displays 5 personal 'risk' factors that are associated with participation of coastal aquatic sports.  
On the supplied scale please classify your perception of these risk factors prior or during an activity?

	Risk Factor	None	V-Low	Low	Medium	High	V-High
9:1	Other people's ability	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
9:2	Other people's attitudes	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
9:3	Weather & sea conditions	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
9:4	Other types of craft at site	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
9:5	Overcrowding of site	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

10. While participating in your sport has any person or aquatic craft ever collided with you?  
Yes [ ] No [ ]

11. Have you ever accidentally collided with another person or aquatic craft ?  
Yes [ ] No [ ] Don't Know [ ]

12. Have you or your equipment sustained any injury or damage due to a collision with another person or craft?  
Yes [ ] No [ ]  
(12a: Describe .....)

13. Do you think that your sporting experience is reduced when you share the same water space with other participants of coastal aquatic sports?  
Yes [ ] No [ ] Don't Know [ ]

14. Do you think that you are at more risk when you share the same water space with other participants of coastal aquatic sports?  
Yes [ ] No [ ] Don't Know [ ]

15. Whilst participating in your sport have you ever encountered from any coastal aquatic sports participant, any of the three types of hostility listed on (Card D)?

Verbal	Yes [ ]	No [ ]
Gestures	Yes [ ]	No [ ]
Physical	Yes [ ]	No [ ]

16. Can you visualize a water space the size of a football pitch?  
Yes [ ] No [ ]

17. Consider your personal safety and the quality of your sporting experience.

Given the water space the size of a football pitch for your coastal aquatic sport activity, can you make a guess of how many individual craft/persons are compatible with your sport in that space?

Swim.	Beginner	N/A	<input type="checkbox"/>	No	<input type="checkbox"/>	Intermediate:	N/A	<input type="checkbox"/>	No	<input type="checkbox"/>	Experienced:	N/A	<input type="checkbox"/>	No	<input type="checkbox"/>
B/Board	Beginner	N/A	<input type="checkbox"/>	No	<input type="checkbox"/>	Intermediate:	N/A	<input type="checkbox"/>	No	<input type="checkbox"/>	Experienced:	N/A	<input type="checkbox"/>	No	<input type="checkbox"/>
S/Board	Beginner	N/A	<input type="checkbox"/>	No	<input type="checkbox"/>	Intermediate:	N/A	<input type="checkbox"/>	No	<input type="checkbox"/>	Experienced:	N/A	<input type="checkbox"/>	No	<input type="checkbox"/>
L/Board	Beginner	N/A	<input type="checkbox"/>	No	<input type="checkbox"/>	Intermediate:	N/A	<input type="checkbox"/>	No	<input type="checkbox"/>	Experienced:	N/A	<input type="checkbox"/>	No	<input type="checkbox"/>
Surf/Ski	Beginner	N/A	<input type="checkbox"/>	No	<input type="checkbox"/>	Intermediate:	N/A	<input type="checkbox"/>	No	<input type="checkbox"/>	Experienced:	N/A	<input type="checkbox"/>	No	<input type="checkbox"/>
Canoe	Beginner	N/A	<input type="checkbox"/>	No	<input type="checkbox"/>	Intermediate:	N/A	<input type="checkbox"/>	No	<input type="checkbox"/>	Experienced:	N/A	<input type="checkbox"/>	No	<input type="checkbox"/>
Wind/Surf	Beginner	N/A	<input type="checkbox"/>	No	<input type="checkbox"/>	Intermediate:	N/A	<input type="checkbox"/>	No	<input type="checkbox"/>	Experienced:	N/A	<input type="checkbox"/>	No	<input type="checkbox"/>
Sail Boat	Beginner	N/A	<input type="checkbox"/>	No	<input type="checkbox"/>	Intermediate:	N/A	<input type="checkbox"/>	No	<input type="checkbox"/>	Experienced:	N/A	<input type="checkbox"/>	No	<input type="checkbox"/>
Jet/Ski	Beginner	N/A	<input type="checkbox"/>	No	<input type="checkbox"/>	Intermediate:	N/A	<input type="checkbox"/>	No	<input type="checkbox"/>	Experienced:	N/A	<input type="checkbox"/>	No	<input type="checkbox"/>
Power/boat	Beginner	N/A	<input type="checkbox"/>	No	<input type="checkbox"/>	Intermediate:	N/A	<input type="checkbox"/>	No	<input type="checkbox"/>	Experienced:	N/A	<input type="checkbox"/>	No	<input type="checkbox"/>
Sub/Aqua	Beginner	N/A	<input type="checkbox"/>	No	<input type="checkbox"/>	Intermediate:	N/A	<input type="checkbox"/>	No	<input type="checkbox"/>	Experienced:	N/A	<input type="checkbox"/>	No	<input type="checkbox"/>
Angler	Beginner	N/A	<input type="checkbox"/>	No	<input type="checkbox"/>	Intermediate:	N/A	<input type="checkbox"/>	No	<input type="checkbox"/>	Experienced:	N/A	<input type="checkbox"/>	No	<input type="checkbox"/>

18. How would you assess your knowledge of the 'sporting' codes of practice and rules that are associated with your aquatic sport.

Knowledge ..... None [ ] Very Low [ ] Low [ ] Medium [ ] High [ ] Very High [ ]

Other (.....)

19. In general do you think that the 'sporting' codes of practice and rules that are associated with your aquatic sport are

▪ easily accessible?	Yes [ ]	No [ ]
▪ effective for the current usage of your coastal aquatic sports?	Yes [ ]	No [ ]

20. Are you a member of any organisation associated with your aquatic sport? Yes [ ] No [ ]

21. Are you a member of the recognized governing body for your aquatic sport?

Yes [ ] No [ ] Don't Know [ ]

22. What are the name/s of the coastal aquatic sport organisation/s of which you are a member?

23. Are you aware of any government policies, laws or local council guidelines relating to your particular coastal aquatic sport? Yes [ ] No [ ]

24. In general do you think that policy, law or local council guidelines are effective for the current usage of the coastal aquatic sports with which you are familiar? Yes [ ] No [ ] Don't Know [ ]

25. Can you identify any type of coastal aquatic sport regulating management structure in place at this location? No [ ]

.....  
.....

26. Can you identify any type of coastal aquatic sport regulating management structure at any other location? No [ ]

.....  
.....

27. Consider your 'Safety' and 'Quality of Experience' when you participate in coastal aquatic sports.  
Can you suggest types of regulation or control measures that you think would improve the management of coastal aquatic sports?

.....  
.....  
.....  
.....  
.....

28. Other comments.

-----  
-----  
-----

COUNTY Where You Live	<input type="text"/>	Distance Travelled Today	<input type="text"/>
AGE:	16 -25 <input type="checkbox"/>	26- 35 <input type="checkbox"/>	36-45 <input type="checkbox"/>
			46+ <input type="checkbox"/>
MALE <input type="checkbox"/>	FEMALE <input type="checkbox"/>	OCCUPATION	<input type="text"/>
VISITOR <input type="checkbox"/>	RESIDENT <input type="checkbox"/>	CAR OWNER Yes <input type="checkbox"/>	No <input type="checkbox"/>



## **Appendix Two**

2.1 Craft Assessment Sheet and Coding

2.2 Weekly Log Sheet

CRAFT ASSESSMENT SHEET

Local Authority ..... Week Ending .....

Beach ..... Senior Lifeguard .....

Sand banks : Good [ ] Poor [ ] N/A [ ]

KEY: H/T (High Tide). Swell: (Wave Size) 1ft / 2ft / 3ft etc. Force: (Speed) 1, 2, 3, -6, 7 etc,  
M/T (Middle Tide). Wind: (Direction) N/W - S/W. W Met (Weather) S (Sunny) R (Rainy) O (Overcast).  
L/T (Low Tide).

Swell	Wind	Met
2	SW 5	O/R

SAT	SMALL SAIL CRAFT	POWER BOAT	JET SKI	SUB- AQUA	WIND SURFER	CANOE	SURF SKI	SURF- BOARD	BODY- BOARD	SWIMMER BATHER	TIDE			WIND		
											H/ T	M/ T	L/ T	SWELL	FORCE	MET
11 AM											[ ]	[ ]	[ ]			
2 PM											[ ]	[ ]	[ ]			
5 PM											[ ]	[ ]	[ ]			

SUN	SMALL SAIL CRAFT	POWER BOAT	JET SKI	SUB- AQUA	WIND SURFER	CANOE	SURF SKI	SURF- BOARD	BODY- BOARD	SWIMMER BATHER	TIDE			WIND		
											H/ T	M/ T	L/ T	SWELL	FORCE	MET
11 AM											[ ]	[ ]	[ ]			
2 PM											[ ]	[ ]	[ ]			
5 PM											[ ]	[ ]	[ ]			

MON	SMALL SAIL CRAFT	POWER BOAT	JET SKI	SUB- AQUA	WIND SURFER	CANOE	SURF SKI	SURF- BOARD	BODY- BOARD	SWIMMER BATHER	TIDE			WIND		
											H/ T	M/ T	L/ T	SWELL	FORCE	MET
11 AM											[ ]	[ ]	[ ]			
2 PM											[ ]	[ ]	[ ]			
5 PM											[ ]	[ ]	[ ]			



**CODING: RELEVANT TO LIFEGUARD WEEKLY LOG SHEET**

**R: Rescue.** Whereon the lifeguard must wholly commit him/herself to an identified immediate dangerous situation involving members of the public. This will potentially involve close contact with person/s unknown.

**AS: Assisted Rescue:** whereon the lifeguard must wholly commit him/herself to an identified potentially dangerous situation involving member/s of the public. This may not involve close physical contact with person/s unknown.

**PA: Preventative Advice:** whereon the lifeguard must have an overall responsibility and regard for the safety of members of the public and, employing the correct advice ensure, that all preventative measures are being taken to maximise public safety and minimise the occurrence of potentially dangerous incidents.

**CODING FOR WATER CRAFT:**

Small Sail Craft	<b>SSC</b>	Surf Ski	<b>SS</b>
Power Boat	<b>PB</b>	Long Board	<b>LB</b>
Jet Ski	<b>JS</b>	Short Board	<b>SB</b>
Wind Surfer	<b>WS</b>	Body Board	<b>BB</b>
Canoe /Kayak	<b>C</b>	Swimmer/Bather	<b>SW</b>
Water Ski	<b>WSK</b>	Sub Aqua	<b>SA</b>

Example: R = BB x 3 + C x 1 (Rescue = Three Bodyboarders and One Canoe)  
AS = SW x 4 (Assisted Rescue = Four Swimmers)

<p><b>INCIDENTS, COMPLAINTS EQUIPMENT FAULTS, NAMES ETC</b></p>
<p>R = BBx3 + Cx1...</p> <p>AS = SW x 4</p>

WEEKLY LOG SHEET

AUTHORITY:

NAME OF BEACH :

WEEK ENDING (Friday) :

DAY

DUTY LIFEGUARDS

WEATHER: Sun [ ] Fog [ ] Rain [ ] Cloud [ ]

RIPS : Slight [ ] Normal [ ] Bad [ ] Severe [ ]

SEA STATE : 0 1 2 3 4 5 6 7 8 9 +

Flat [ ] Clean [ ] Messy [ ] Rough [ ]

WIND: Direction [ ] Force [ ]

MINOR FIRST AID

CRAFT INJURY

Private Craft

Hire Craft

Self-inflicted

By Another

BEACH / WATER

RED FLAG 'TIME'

Quiet [ ] [ ] [ ]

Average [ ] [ ] [ ]

Busy [ ] [ ] [ ]

V/Busv [ ] [ ] [ ]

Hoisted :

Lowered :

MAJOR FIRST AID

Incident (Land) [ ]

Incident (Air) [ ]

Citation [ ]

RESCUE EQUIPMENT

Torpedo I.R.B Other Mass

INCIDENTS, COMPLAINTS

EQUIPMENT FAULTS, NAMES ETC

OUT INCIDENT REPORT.

DAY

DUTY LIFEGUARDS

WEATHER: Sun [ ] Fog [ ] Rain [ ] Cloud [ ]

RIPS : Slight [ ] Normal [ ] Bad [ ] Severe [ ]

SEA STATE : 0 1 2 3 4 5 6 7 8 9 +

Flat [ ] Clean [ ] Messy [ ] Rough [ ]

WIND: Direction [ ] Force [ ]

MINOR FIRST AID

CRAFT INJURY

Private Craft

Hire Craft

Self-inflicted

By Another

BEACH / WATER

RED FLAG 'TIME'

Quiet [ ] [ ] [ ]

Average [ ] [ ] [ ]

Busy [ ] [ ] [ ]

V/Busv [ ] [ ] [ ]

Hoisted :

Lowered :

MAJOR FIRST AID

Incident (Land) [ ]

Incident (Air) [ ]

Citation [ ]

RESCUE EQUIPMENT

Torpedo I.R.B Other Mass

INCIDENTS, COMPLAINTS

EQUIPMENT FAULTS, NAMES ETC

OUT INCIDENT REPORT.

DAY

DUTY LIFEGUARDS

WEATHER: Sun [ ] Fog [ ] Rain [ ] Cloud [ ]

RIPS : Slight [ ] Normal [ ] Bad [ ] Severe [ ]

SEA STATE : 0 1 2 3 4 5 6 7 8 9 +

Flat [ ] Clean [ ] Messy [ ] Rough [ ]

WIND: Direction [ ] Force [ ]

MINOR FIRST AID

CRAFT INJURY

Private Craft

Hire Craft

Self-inflicted

By Another

BEACH / WATER

RED FLAG 'TIME'

Quiet [ ] [ ] [ ]

Average [ ] [ ] [ ]

Busy [ ] [ ] [ ]

V/Busv [ ] [ ] [ ]

Hoisted :

Lowered :

MAJOR FIRST AID

Incident (Land) [ ]

Incident (Air) [ ]

Citation [ ]

RESCUE EQUIPMENT

Torpedo I.R.B Other Mass

INCIDENTS, COMPLAINTS

EQUIPMENT FAULTS, NAMES ETC

OUT INCIDENT REPORT.

WEEKLY TOTALS								
QUESTIONS	ASSISTED RESCUES	PREVENTATIVE ADVICE	SURFCRAFT WARNINGS	CRAFT INJURY	MAJOR 1 <sup>ST</sup> AID	MINOR 1 <sup>ST</sup> AID	LOST CHILDREN	COAST GUARD

PUBLIC RESCUE AIDS CHECK [ ] SIGNED .....

DAY	DUTY LIFEGUARDS	WEATHER: Sun [ ] Fog [ ] Rain [ ] Cloud [ ]	BEACH / WATER	RED FLAG 'TIME'
		RIPS : Slight [ ] Normal [ ] Bad [ ] Severe [ ]	Quiet [ ] [ ] [ ]	Hoisted :
ater:		SEA STATE : 0 1 2 3 4 5 6 7 8 9 +	Average [ ] [ ] [ ]	Lowered :
		Flat [ ] Clean [ ] Messy [ ] Rough [ ]	Busy [ ] [ ] [ ]	
		WIND: Direction [ ] Force [ ]	V/Busv [ ] [ ] [ ]	
MAJOR FIRST AID		INCIDENTS, COMPLAINTS		
ulance (Land) [.....]		EQUIPMENT FAULTS, NAMES ETC		
ulance (Air) [.....]		.....		
scitation [.....]		.....		
[.....]		.....		
RESCUE EQUIPMENT		.....		
Torpedo I.R.B Other Mass		.....		
		.....		
		.....		
		.....		
LL OUT INCIDENT REPORT.				

WEDNESDAY	DUTY LIFEGUARDS	WEATHER: Sun [ ] Fog [ ] Rain [ ] Cloud [ ]	BEACH / WATER	RED FLAG 'TIME'
		RIPS : Slight [ ] Normal [ ] Bad [ ] Severe [ ]	Quiet [ ] [ ] [ ]	Hoisted :
ater:		SEA STATE : 0 1 2 3 4 5 6 7 8 9 +	Average [ ] [ ] [ ]	Lowered :
		Flat [ ] Clean [ ] Messy [ ] Rough [ ]	Busy [ ] [ ] [ ]	
		WIND: Direction [ ] Force [ ]	V/Busv [ ] [ ] [ ]	
MAJOR FIRST AID		INCIDENTS, COMPLAINTS		
ulance (Land) [.....]		EQUIPMENT FAULTS, NAMES ETC		
ulance (Air) [.....]		.....		
scitation [.....]		.....		
[.....]		.....		
RESCUE EQUIPMENT		.....		
Torpedo I.R.B Other Mass		.....		
		.....		
		.....		
		.....		
LL OUT INCIDENT REPORT.				

THURSDAY	DUTY LIFEGUARDS	WEATHER: Sun [ ] Fog [ ] Rain [ ] Cloud [ ]	BEACH / WATER	RED FLAG 'TIME'
		RIPS : Slight [ ] Normal [ ] Bad [ ] Severe [ ]	Quiet [ ] [ ] [ ]	Hoisted :
ater:		SEA STATE : 0 1 2 3 4 5 6 7 8 9 +	Average [ ] [ ] [ ]	Lowered :
		Flat [ ] Clean [ ] Messy [ ] Rough [ ]	Busy [ ] [ ] [ ]	
		WIND: Direction [ ] Force [ ]	V/Busv [ ] [ ] [ ]	
MAJOR FIRST AID		INCIDENTS, COMPLAINTS		
ulance (Land) [.....]		EQUIPMENT FAULTS, NAMES ETC		
ulance (Air) [.....]		.....		
scitation [.....]		.....		
[.....]		.....		
RESCUE EQUIPMENT		.....		
Torpedo I.R.B Other Mass		.....		
		.....		
		.....		
		.....		
LL OUT INCIDENT REPORT.				

FRIDAY	DUTY LIFEGUARDS	WEATHER: Sun [ ] Fog [ ] Rain [ ] Cloud [ ]	BEACH / WATER	RED FLAG 'TIME'
		RIPS : Slight [ ] Normal [ ] Bad [ ] Severe [ ]	Quiet [ ] [ ] [ ]	Hoisted :
ater:		SEA STATE : 0 1 2 3 4 5 6 7 8 9 +	Average [ ] [ ] [ ]	Lowered :
		Flat [ ] Clean [ ] Messy [ ] Rough [ ]	Busy [ ] [ ] [ ]	
		WIND: Direction [ ] Force [ ]	V/Busv [ ] [ ] [ ]	
MAJOR FIRST AID		INCIDENTS, COMPLAINTS		
ulance (Land) [.....]		EQUIPMENT FAULTS, NAMES ETC		
ulance (Air) [.....]		.....		
scitation [.....]		.....		
[.....]		.....		
RESCUE EQUIPMENT		.....		
Torpedo I.R.B Other Mass		.....		
		.....		
		.....		
		.....		
LL OUT INCIDENT REPORT.				

**Appendix Three**

Appendix 2.1	Interview John Board
Appendix 2.2	Interview Peter Braidley
Appendix 2.3	Interview Lorraine Brown
Appendix 2.4	Interview Nicola Carnie
Appendix 2.5	Interview Robyn Rafael
Appendix 2.6	Interview David Reid
Appendix 2.7	Interview Susan Tolland
Appendix 2.8	Interview Jerry Urdley
Appendix 2.9	Interview Fiona Wood

**John Board**

**Beach Manager Cornwall and Devon: LAs and RNLI**

**JUNE 20<sup>TH</sup> 2002**

**Marcus Hill NEWQUAY**

1. [1] The primary role of my organisation is Sea Safety. [2] The organisation is accountable to the RNLI Beach Rescue. [3] When a participant engages in a CAS sport in an area patrolled by lifeguards their safety would come under our umbrella. [4] My role within that organisation is to Co-ordinate lifeguard services in Devon and Cornwall. [5] The RNLI are in a service agreement with the Local Authority or alternatively with a private beach owner. [6] We also integrate with rescue services ambulance, fire or other rescue services that we might need to call to the beach. [7]
2. The Ambulance service assists in training. [8] The MCA assist in training.
3. [9] If I knew what incoming European legislation and regulations were I could answer if they may affect CAS. [10] Yes, licensing powerboat. [11] However what is patchy is the licensing of surfing schools. [12] This is becoming a particular problem on some of the busy beaches. [13] I do not believe that central / and or local government policies and regulations are effective for the current CAS use?
4. [14] The only real regulations are the local bylaws. [15] Bylaws are badly in need of upgrading. [16] The main areas for attention are the basics surfing bylaws and the registration of surfing schools to improve safety. [17] Bylaws require updating or improving.
5. [18] Yes, I would agree that all planning and policy issues relevant to the coastal zone should become more transparent to external agencies, communities and industries?
6. [19] No I can-not identify an overall effective multi –use CAS management system currently available in the UK. [20] The problem specific with the beaches is surfing. [21] I do not believe there is an effective way of managing surfing, because surfers tend to be a rule unto themselves. [22] Which is great because it is part of the sport
7. [23] Yes definitely some of the major beaches on the North Coast that all the lifeguards know are well over saturation point.
8. [24] I cannot think of anybody else, who would be more effective, than the National Sports Governing Bodies for the dissemination of CAS Codes of Practice. [25] But most surfers are not affiliated to the BSA. [26] But if anybody could draw up guidelines then BSA would be the ones to do it. [27] SCP could be an effective CAS management tool if they were written properly
9. [28] A combination of self- regulation and beach management is an effective management tool for all users of CAS. [29] I think you can only manage a beach effectively if you have the good facilities to support it; this is what we are finding as we are spreading out along the coast. [30] Facilities in general are very poor. [31] Long term issues. [32] One man and whistle cannot effectively manage a beach.



10. [33] 3<sup>rd</sup> party liability insurance as a responsibility measure for CAS participation is very hard to enforce yet very advisable. [34] Who would enforce it? [35] Is it another job for the lifeguard? [36] Someone walking down the beach in a wet suit they have no id. [37] We have tried registration of surfboards and it became unmanageable.
11. [38] Yes registration of motor craft, i.e. jet skis and motor craft coming too close to shore. [39] With surf craft we tried but it became difficult to enforce.
12. [40] Yes a voluntary singular marine licence available for CAS participants is an idea. [41] The RYA does basic courses but that could be extended. [42] YES electronic swipe card. [42] Zoning policies as a management mechanism is essential on the busy beaches. [43] Although people coming on holiday do not know what they mean. [44] But on the beaches they are essential to manage properly. [45] The use of power source as a management mechanism would help.
13. [46] Yes, infrastructure planning as a means of CAS management. [47] Well as I mentioned before it is difficult to manage a beach without the facilities. [48] Some areas manage power-craft, by directing them to certain launch ways, that way the participants can be reached before they get into the water. [49] They will lock up certain launch ways and only leave one open that way they have to go past the hut, that way they can check registration. [50] Yes-good form of managing, car parking yes as well. [51] yes I have to agree
14. [52] Yes 90% of good management mechanism is education. [53] I think it should be people directly involved with each individual sport. [54] NGB because the information needs to be put together expertly by the experts in each field.
15. [55] The Agency responsible for safety is the MCA that is the umbrella organisation, then the information is passed down to the lifeguards. [56] That is the only policing there is. [57] There are a few LAs that combine policing with their lifeguards: that is a difficult one. [58] If it is a safety aspect then it is the lifeguard service. [59] As the beach rescue service is rolling out across the country that would help to standardise it. [60] This needs to be done carefully and done closely with the LAs as they are to the main extent the landowners and responsible for the bylaws regulations.
16. [61] CAS participants, Surf rage. Yes!
17. [62] Do not know which Agency or Government body should take up the challenge of producing a National framework that may assist in the harmonisation of CAS. [63] There are various National groups there is ROSPER. [64] Also the National Beach Safety Council which is made up of persons from LAS and of course NGBs. [65] Yes I agree with the concepts of ICZM although I am not up to date with this.

**Peter Braidley. RNLI.****Monday 15<sup>th</sup> July West Cue Road, Poole. Dorset**

1. [1] The primary role of the RNLI is to provide a life saving service, a proactive life saving service in the form of boats and in certain areas beach lifeguards. [2] We also have a preventative role in water safety and water management. Which is where I come in the primary role is saving life. [2] The RNLI is accountable to its trustees. [3] We do not have any accountability to government other than we have an unwritten agreement that we will provide a lifesaving service in the form of beach lifeguards to satisfy their remit in the International Search and Rescue Convention in which they have to sign up too. [4] They agree to provide a maritime rescue service, they provide helicopter side of it managed by the coastguard and cliff rescue teams and we fulfil the role of the sea borne side of it.
2. [5] We liaise and work with SLSA the RLSS MCA RoSPA LAs Department of Transport, Welsh Office the list is endless RYA, BMF, and European and International level we liaise with other lifesaving organisations in particular with other life boating organisations through the International Lifeboat Federation which we actually we hold the Secretariat for.
3. [6] Knowledge sharing and integrated systems are more of a liaison and a sharing of information. [7] Statistics we would share with other agencies and our partners in the world and we also share things like the design of lifeboats the management structures and that sort of thing. [8] We are in fact furiously independent. [9] I am not saying that the RNLI holds the monopoly on what we do because we don't, there are private rescue organisations around like in the Sol and the Bristol Channel etc. [10] We have in terms of longevity the most experience in marine rescue even more than the coastguard do regards managing. [11] The RNLI do take heed of other charitable organisations. [12] The National Charitable commission we take heed of what they say and they are actually quite happy in the way we manage our business. [13] There are other charities that provide us information in the way they do things and we take notice of there advice. [14] Government agencies I do not think so, they are in to cost cutting and all. [15] That is where we are not, we take a different view we are totally successful at fundraising and are operational budget is 103 million pounds pa. [16] So we set the targets to raise that amount of money and we tend to raise 10+15% above that. It just happens that way, so we are able to put money in the bank.
4. [17] I am sure CAS responsibilities affected by incoming European recommendations and legislation will be in the course of time. [18] But of course National Government can decide what they are going to sign up to. [19] I think that the RNLIs position in all this is that we tend not to go blazing through saying there should be regulation for regulations sake. [20] Whatever bylaws come in or whatever regulations come in providing they add to the case of safety then that is fine but if it is regulation for regulations sake then we would not support it. [21] We firmly believe that education is the key to safety around our coastlines.

5. [22] I do not believe that central / and or local government policies and regulations are effective for the current CAS use. [23] From the position of the RNLI we support the regulation that has value. [24] Currently the LAs are left to their own devices to produce legislation and local regulation to satisfy whatever local need without a great deal of direction from Government. [25] It seems to me that there is no real national legislation effective for CAS around our coastline be it surfing or sailing it is left to LAs to manage their affairs in very different ways. [26] Poole is a good example they have a good grip on it they have introduced zoning, speed limits and all those sorts of thing that you would expect from a good water management scheme but other LAs pay no heed to it at all
6. [27] Yes I believe bylaws require updating or improvement. [28] I think planning and policy issues relevant to the coastal zone should become more transparent to external agencies, communities and industries. [29] To actually gain support for management schemes then they need to inform the public at large and other agencies to what the plan is and otherwise you get people resisting because they are mis-informed or they do not know what it is about.
7. [30] An example of overall effective multi-use CAS management system currently available in the UK is Poole, and the Poole Bay harbour. [31] These are managed by the Harbour Commissioners Authorities and the two LAs or Poole and Bournemouth. [32] I think it is a good scheme that they operate. [33] I am not informed on CAS saturation levels being exceeded in some locations.
8. [34] I believe that NGB could be the ideal vehicle for the dissemination of CAS Codes of Practice if there were not so many of them. [35] The problem is that there are so many organisations trying to do the same thing and not necessarily joined up. [36] There are so many organisation involved in sport in general and not just in aquatic sports that all of them want a say and some are better organised than others some would disseminate information and codes of practice very well and others would get an imbalance again.
9. [37] I think any code of practise is good management so long as it is well devised. [38] I am not so well informed with the CAS SCP as perhaps I should be. [39] Whether they are really effective I am not sure. [40] You are right it is dependent on interpretation, the way it is written.
10. [41] In certain areas, certain sports take on a very positive role and would see themselves as champions of self-regulation and other areas do not, speaking in general terms. [42] Boating for example, there are terms of self regulation there with the different classes of boats that are out there, jet-skis are a classic one. [43] The industry or the manufactures do take quite a responsible attitude and place their own codes that they want there users to follow. [44] But it is the type of person who does not want to pay any heed to coastal practice.
11. [45] Financial strategies used as an effective management tool. [46] Yes, Well in the sense that LAs could make it very attractive to enhance bylaws by providing local subsidies to do that, or to provide a full coastal management system. [47] The trouble is central government is always saying here you get on with it but there is no money. [48] The industry itself could I think make it more attractive for the end user

by providing incentives and things like that for the user to follow codes of practice.  
[49] They could be more informed and educated about codes of safety etc.

12. [50] I think everybody should have 3<sup>rd</sup> party liability insurance as a responsibility measure for CAS participation. [51] Again talking about the boating side of things you do not have to have any insurance at all on a boat. [52] Yet, the same people who drive boats, drive cars and they do think about having third party insurance for their cars but the boat is often a more valuable asset and they do not.
13. *Discussion of road driving skill transference.* [53] Difficult to make general assumption, but we do know that people who have no education about using the sea or water are more likely to have accidents this is ascertained by research carried out. [54] The RYA has found that people who have training are less likely to have accidents than people who do not. [55] People who buy a jet –ski from the Exchange & Mart will trail it down (I won't say Birmingham but usually a central inland area) they charge down here on a Sunday afternoon, launch off here and tear around and they do not actually know that they are doing anything wrong.
14. [56] There are registration schemes around, some are voluntary and some are statutory, the small ships registers scheme for instance that is when a boat is over 13.2 m has to be registered. [57] There is also a European slant to this isn't there? [58] The French for example will not allow a boat/ship to come into their waters that is not registered, thus even a 12m boat will have to join the small ships register in order to go to France. [59] There are issues like that. [60] From the lifesaving point of view not the tax collection or whatever point, the lifesaving point of view. [61] I think it is very valid to have a registration scheme because that way we would keep a handle on where the boat is, who the owner is and the boat colour alterations or whatever. [62] That way we will have an up to date 'data base' when we are going out to a vessel in the event of a rescue that way we will know exactly what we are going out to.
15. [63] A voluntary 'overall' singular 'marine' licence sound like a good idea to me!  
[64] That's sound a very reasonable thing to do.
16. [65] Yes, the use of power source as a management mechanism that is the way we do it only we use different terms like manually propelled craft. [66] We separate power boats in to size. [67] And wind propelled we classify if they have auxiliary power on board. [68] Yes I think it is important that you do collect it that way.
17. [69] I think there is a Government remit for education and increased training resources. [70] We have a department for education. [71] I am not saying that they should manage it but they should be pushing for it. [72] I think that the government or whatever agency in Government could be doing a lot more to raise awareness of water safety issues and to point people in the right direction to pick up the education that they need. [73] I think the RNLI do a lot to push the case we do not 'educate' ourselves but we do raise awareness and bring forward issues and possible solutions. [74] A novice diver for example if they came to us we would advise them to go to BSAC or PADI or Scottish Sub Aqua and like ways Sailing either the RYA or the Irish Sailing Association we see ourselves as a portal for training. [75] People do come to us and ask us lots of questions. [76] We do not hold a

monopoly on anything but people do seem to trust the RNLI and come to us for information we give the information and steer them in the right direction.

18. [77] I am not sure I have an answer to the implementation of a central / regional coastal policing body. [78] I see how it works in the USA and how it works on a National level and then they have State laws it is quite interesting really how some of the state laws conflict with the central legislation it depends on who catches you speeding. [79] I would have to be convinced that it is money well spent if you were putting in an active police force (marine).
19. [80] I do perceive the development of horizontal as well as vertical information systems (ICZM) would assist in the effective management of CAS. [81] ICZM yes I think there has to be a lateral joining up of information systems as well as just cascading.
20. Effective CAS management programs / structures and policies will eventuate in significant economic savings for a region. [82] The value of life. [83] There are a number of documents; the USA numbers vary depending on what parameters that they take into account it is anything from 800,000 up to 1.2 million. [84] There are massive consequences for the loss of life, loss of revenue earner, the tax loss, the community revenue loss, and all the costs of supporting the family. [85] There is a massive knock on effect.
21. [86] I do not think there is any Government department tailored to take up the challenge of producing a National framework that may assist in the harmonisation of CAS. [87] But as DEFRA or DFT actually manage a lot of the coastal business MCA for example perhaps they are the natural ones to do it.
22. *Discussion of who is over-viewing 'Jo Bloggs' in coastal management. You have hit the nail on the head there.* [88] There is no ONE government department that has taken on the responsibility for Safety, CAS or policing on the water. [89] There needs to be one single agency responsible for that. [90] Not necessarily DEFRA. [91] For instance agencies or organisations have various departments and quite often in traditional hierarchal organisations operations, people will operate in chimneys and the operations department has 'nothing to do with me', when in fact it is the finance department that are providing the budgets for them to operate with. [92] I think the same happens in Government departments. [93] Tony Blair talks about joined up Government the example of CAS or water safety... or whatever you want to call it is not a good example of joined up Government because no one agency is taking a grip on it. [94] The RNLI and RoSPA are trying to push for it, this is because we are trying to say to Government that there should be one agency that we could report to for Marine safety. [95] We should like for there to be one minister that we could report to about water issues not water quality but water uses. [96] We do have problems with the environmental issues, there does seem to be a great deal of attention given to water quality and Ecoli, but how many people actually die of ecoli? [97] However how many people have accidents or die due to poor safety and lack of in situ safety requirements in activities and sports.

1. [1] The primary role of Sport England is to provide support and guidance on all aspects of sport. [2] The organisation is accountable to the Government. [3] I am not really sure if we have a clear definition of how we work with CAS. [4] We do not have an overall policy of how we work with the individual sports it is based on their needs. [5] We tend to work with them not in the way they impact upon the environment but in terms of their impact on development, equity challenge and protection and governance.
2. [6] My responsibility is well defined I have a clear job description. [7] I work with my sports base on services that they can provide. [8] We give funding to a number of organisations through the exchequer program, SLSA is one of them. [9] In particular we give funding for the development of coaches and the development of pathways. [10] Especially women because of male dominant sport we are looking at trying to induce more women into the sport. [11] We are looking at sort of equity policies as well because we are trying to incorporate the ways and means of encouraging lots of people from different backgrounds to get involved sport. [12] Sub-Aqua, we do not give any funding to they claim through the community fund for their facilities. [13] Some I try to get funding for launches, equipment and buildings so they can participate in their sport. [14] We only recognise BSAC as the NGB although there are other organisations that call themselves the governing bodies of sub-aqua.
3. [15] We integrate with all National Sport Bodies, and leading agencies in England. [16] Also the UK Sports Council, because we have a number of British Sport Governing Bodies. [17] Although the majority of members are English so they come to us for recognition of English programmes but obviously they have a UK GB remit and for that side of things we negotiate with UK Sport Council. [18] This is because we do not want to double fund something or for us as Sport England to demand something off the NGB when UK Sports are demanding something quite different. [19] We discuss with Governing bodies that are being pulled apart and trying to do two things at once. [20] It is really difficult at times [21] Other bodies we work with are the department of education / health and other sporting bodies like sport UK, child protection unit around the country. [22] And there is another body called sporting equals that looks at equity in sport we give them funding to develop generic policies and support mechanism for sporting organisations to go to them to discuss sporting issues. [23] There are sports trust as well there is also a whole array of other bodies.
4. [24] I think we try and broker as well. [25] We try and work with youth sports trust but we can not get in to them for what ever reason, so we try and broker them and create a link there
5. [26] No comment on my perception of UK CAS responsibilities to be affected by incoming European recommendations and legislation. [27] I do not know about central / and or local government policies and regulations so I can not comment on issues.

6. [28] I think there should be more planning and policy communication because at the moment I know nothing about these things. [29] It would be useful to me to know these when I am talking to my incoming bodies. [30] This is because they are talking about issues that are important to them and I do not know what they are talking about, so it makes it difficult so YES!
7. [31] The only overall effective multi –use CAS management system I can talk about is our National Centre based in Nottingham. [32] There might be others that are working together but I do not know of these. [33] No, I do not know enough about CAS growth to make any comment on it being sustainable in the UK.
8. [34] NGB are one type of organisation for the dissemination of CAS Codes of Practice. [35] But not everyone has a membership of these bodies to understand the SCP. [36] So you have to look at other opportunities to disseminate SCP. [37] There might be publications that people might buy of the shelves. [38] Information available at the actual venues themselves, public places in the vicinity
9. [39] Self-regulation effective management. [40] Self management sounds very fancy and good but sometimes it needs somebody to take the lead
10. [41] Financial strategies could be ways of tackling a problem. [42] Like NGB could say that if you become a member of us you will get a reduction or so on, attraction to get someone to become a member. [43] Also go straight to the manufacturers and get them to disseminate SCP. [44] 3<sup>rd</sup> party liability insurance as a responsibility measure for CAS participation, is very important
11. [45] Yes my opinion on the registration of craft. [46] But this is a personal opinion. [47] From my experience I believe that Jet Skis in the wrong hands. [48] It is important for people to understand that the equipment that they are using has power. [49] So registration & regulation there should be some sort of health & safety issue attached to them.
12. [50] My opinion on a voluntary singular licence available for CAS participants. [51] Yes that has a lot of implications human rights and so on. [52] But if it is voluntary it could be very useful. [53] This would help with cross over skills between the NGBs like pre-learned skills from one organisation being recognised by another. [54] Zoning policies as a management mechanism as in Health & Safety suggests that this is a good solution. [55] Yes to the use of power source as a management mechanism? [56] I would suggest that infrastructure planning as a means of CAS management is crucial
13. [57] The NGB have a role to play in that members come to them and pay a membership and the education is one element also they run courses. [58] It is difficult to say because the Harbour Authorities have control of some areas and of course they have a duty of care to persons using their facilities.

14. [59] The implementation of a central / regional coastal policing body or the extension of responsibility to other in place agency is a question that is a tricky question. [60] Currently there are a number of agencies that have a role to play, to create one I am not really sure. [61] It would be dependant on the Aims and Objectives of the agency. [62] For example the RNLI are noted as important to the public image they may not be the right sort of authority to move this forward, very complex
15. [63] Yes I definitely perceive that effective planning for the marine CAS resource should derive from integrated structures involving all relevant bodies. [64] I think the more knowledge shared the better. [65] Yes I perceive the development of horizontal as well as vertical information systems (a mechanism of ICZM) would assist in the effective management of CAS?
16. [66] If you are talking about the whole of the UK then it should be UK sport. [67] But if you were talking about just England then it would be Sport England to be the Agency or Government body to take up the challenge of producing a National framework that may assist in the harmonisation of CAS.
17. [1] *If concentration and effort is going into the development of competition in sport and the development of International Olympic teams then how can the overall day to day management of sport be carried out?*
18. [67] Well it depends; I am very passionate of high performance sport. [68] In terms of recreation and especially in this situation where there is argument of safety then somebody has to stand up and take responsibility for it. [69] I agree that language should be more uniform; all sports should come together and find a nation wide safety strategy. [70] Even though each sport is individual there are common themes that affect all marine sports. [71] Once these are identified then the Government could be asked to support these. [72] People who get drowned or get injured cannot work and this affects the economy, (Impact on economy, look at the wider picture) therefore solutions must be found to reduce these types of incidents.



1. [1] In terms of DEFRA we are interested in the sustainable environment for now and the future generations, in terms of the water or the marine and waterways we are looking are the same sort of things, for instance the water levels obviously we are interested in what goes on and those who have an interest. [2] But I am sure that you appreciate that there are lots of questions on over far out we develop rights and jurisdiction and to their extents. But essentially we are looking at the sustainable environment for everyone. [3] We are including people and not excluding people trying to make a sustainable resource for everyone and one that we can manage as a sustainable resource into the future so that is where we are as DEFRA. [4] We are accountable to the Government but again we are accountable to members of the public we have an understatement to deliver things to the public if we do not we have to justify that why we have not done that. We are accountable to Parliament.
  
2. [5] My personal position We have been formed for only one year, In terms of the department as a whole we are in the baptism of fire at the moment. [6] My role within the department is difficult because this is a new theme ICZM, Sam Roeberry has been a one man band for so long. [7] Because we have so many things going on where we have not been in the office at the same time I am feeling my way in the dark. [8] However there is going to be discussions this week as to my role within this dept, what we want to achieve over a period of time what is our driver is the EU recommendation of the ICZM. [9] We as a Nation have agreed to sign up to it but we must come up with a strategy to implement ICZM, we are not going to say to everyone this is how we are going to manage the coast and this is how you should do it. [10] It is really a strategy for people to implement their own ICZM ideas in different sectors. [11] Obviously in the different areas there are different coastal forums, Scottish Coastal Forum, SW coastal forum, Dorset and so on. [13] All these different places have their own coastline and action plans for marine management cells if you like and what we are aiming to do with the EU recommendation is to come up with a strategy where it will assist people to see how they can implement it. [14] It will fit in with the people upstairs and fit in with what the rest of Europe is thinking as well. It is really trying to give people the vehicle to carry out their work from. [15] We have got 44 months now, (random) the final decision will be the recommendations that are made at the end of May, and from that point, I think we have a year initially within which we have to do a stocktaking exercise where we can look at what laws and what bylaws and who will impact on the coastal fringes so with all that information we will know what is going on and why it is in that position. [16] After that when we have collated all our information and drawn up our further report on the stock take we will then have a period from the total from last May to come up with our strategy, this being 10 months, in which we can report back to Brussels and say this is what we have done, so that is our long-term goal, and of course there are lots of things coming off that in which we get involved. [17] One of the things we are dealing with at the moment is that in Government things never happen on time there is always some delay (maybe on the stock take exercise) we are now working out where are

resources can go to and if we can do it ourselves of whether we may have to get partners in to do parts of it for us.

3. [18] Yes what people and Coastal zones need to be aware of, is that when we talk about ICZM, and EU recommendations we are not just talking about a very narrow focus on issues. [19] For instance the sea encroaching on land or ports and harbours, it is the whole it is about anybody who goes or works on/ at the coast or benefits from the coast. [20] It is everybody from that area has to be aware that it is a resource for everyone and that we need to manage it in some way and we can only do that successfully if we are all buying in to the same idea opening up doors to make people aware that we are working together so we they can effectively manage the coastal zone together. [21] The message is that management is as much as about them buying in association, NGB or whatever actually getting involved and speaking up in the whole process as well.
4. *Do you believe that central / and or local government policies and regulations are effective for the current CAS use?*
5. [22] I honestly do not believe that is anything that I can answer because I really do not have the background knowledge. [23] Because of the way historically that we have managed our coastlines it has been done very much in an ad-hoc basis we let people do what they want to do. [24] PWC for instance are not new, but are a phenomenon in sport on the coastal zone, not new but for regulation in the past. These are the types of things that we will need to address in some way.
6. [25] I suspect that CAS saturation levels are being exceeded in certain areas that are. As we discussed earlier if people want to get to the coast they will and it is about us making sure there is reasonable access we should give them that access without damaging the existing environment. [26] On a personal level I can imagine that there will be over use of the coast in certain areas where you might get certain stretches of the coast that is not used because it is seen as boring, no waves, in contrast to others because it will average out.
7. [27] My connotation would be to probably say yes that National Sports Governing Bodies are the ideal vehicle for the dissemination of CAS Codes of Practice, but in partnership with DCMS for instance I am not sure of the relationships between Sport England and DCMS. [28] If I was a CAS person I would probably take more notice of NGB and sporting associations than anything else. [29] It would be advantageous to draw a line against any kind of advertising campaign with a DCMS stamp of approval so that it is not seen as airy fairy, and that it has that mark. Yes but I do think that a partnership must be achieved.
8. [30] Yes I think if CAS Codes of Practice are used properly then yes probably effective, [31] From my experience in home office but it comes down to 'are you using the right vehicle to get the information out there?' [32] We need to look at the big picture. Sale of equipment, in the same way that you go to Dixon's and buy a computer, you may reasonably expect that you can go home and find in the box information about safety issues on line. [33] That does happen, although if read this is effective but unfortunately you are relying on the people to actually read it! When in fact they may be so excited about the new product all they want to do is try it out.

[34] You will need to weigh up the cost effectiveness of actually providing that when there may be other ways of getting the information out to people.

9. [35] I think that self-regulation is a difficult issue, it is difficult for me to give an honest view whether it is effective in CAS this is because I have a lack of understanding of water-sport issues. [36] Looking at things that have practised self-regulation in my home department there are mixed views and I tend to shy away from them. [37] A bit of a yes and no on that. It is always is an option. Yes self-responsibility is a big issue.
10. [38] When you are taking about finances and incentives there are issues of inclusion and exclusion. [39] Because some people do not want to be a member of a club and do not want to pay for something, and there will also be the issues of why Johnny is getting something when we are not. [40] I believe there is some merit but it would have to be looked at very carefully. [41] I suspect that some CAS activities may be seen as elitist that is too much of a step up a strong word really, I think with these issues we need to take care that everybody has the opportunity to take part in an activity and have access to CAS on the coast.
11. [42] Yes I think 3<sup>rd</sup> party liability insurance as a responsibility measure for CAS participation is a difficult one. [43] On the surface it does seem to be quite sensible in case you cause damage to others, property and or yourself. [44] I suppose if you were out and damaged a 'structure' what ever that structure may be, or anyone else, if you did not have insurance you could get into quite a sticky legal position if somebody wanted to pursue you through the courts. [45] Yes I do think it a good idea but it does feed into whether people can afford it or not. [46] Back to costs again, but then again if you want to go on a motorbike or car you would need insurance. [47] Even riding a horse it is always sensible to have insurance.
12. [48] Registration of craft is quite an awkward one actually, would you classify a PWC as a craft. I am not sure because I do not have the background. [50] A voluntary 'overall' singular licence available for CAS participants would seem like an eminently sensible idea really, but not having the background I do not know the justification as to why this has not been done already. [51] Is it too costly? ID cards, does seem more sensible, for ease yes why not cross cutting information. On the surface it does seem like an eminently good idea. [52] Zoning policies for water use- I think overall they are a good idea again accessibility is an issue, because they could be abysmally managed and therefore a total disaster. [53] If well managed and well thought out then yes a good idea, but if you were cutting off an area of surfing because you are using it as a quite area for people, then as a surfer I would be pretty cheesed off.
13. [54] Education and increased training resources as a management mechanism probably feeds into one of the earlier questions that you asked, probably the best organisation to push these forward would be the NGB and Sport England, [55] Do we have Sport England embracing the coast and actions on the coast. Bringing in the right type of bodies and getting them on board to sign up to these things. Getting the levels right, finding a coastal sporting body.

14. [56] I think that a policing body is difficult it would mean bringing in the MCA, however to bring it on line would probably mean involving the police; however we do not have enough officers for inland criminal activities. [57] Perhaps lifeguards? [58] Again it is similar with the police you would not want to have a lifeguard spending an undue amount of time with somebody who is intoxicated with alcohol at the expense of others.
15. [59] ICZM but we must be careful to include everyone; we have a conference in November.
16. [60] The Agency or Government body to take up the challenge of producing a National framework that may assist in the harmonisation of CAS should be DCMS, but it is joined up thinking. It will need to have lots of integration

**23<sup>rd</sup> July 2002**

**Maritime Coastguard Agency, Manchester**

1. [1] The MCA primary role is to make sure vessels are safe and the environment is protected so our logo is safer ships and cleaner sea, in a nutshell safety. [2] Obviously we are an agency and therefore accountable to the Government and the Department of the Environment and Transport. [3] There are two sides of the MCA. [4] Basically the MCA are responsible for the commercial activities and I think that you are more interested in the pleasure and leisure activities, rather than commercial private recreation on the water, now that does not come under any of our Government legislation that is left to LAs to administer too. [5] In most cases apart from where the bylaws become effective around the coast in harbours or in categorised areas then a person can get into a rowboat or a bath tub for that matter and go across the Atlantic under his or her behest without any jurisdiction being applied.
2. [6] The agency is split into two distinct halves if you like originally there was the Coastguard Agency and there was the Marine Safety Agency the two were then brought together. [7] They have distinct functions the Coastguard are responsible under International as well as National law to provide a rescue service and as a by-product of that we do a lot of advisory work with LAs, Activity Centres, Marinas, Harbour Masters, so forth. [8] So we are there as a rescuer and we are there as a friendly advisor if you like this without a legislative backup purely advisory for the non-commercial vessels. [9] On the commercial side again we have a jurisdiction of International and National law the International Maritime Organisation. [10] We provide the enforcement powers we ensure that ships in terms of construction, fixtures and fittings and the qualification of crew are all upheld under legal requirements. [11] So they then brought these two agencies together and we worked together and in many cases co-located. [12] On the one hand we provide the continuing rescue and advisory service and on the other the enforcement service on saying that both agencies work now more closer together and there is an intermingling of the two but there is two distinct services.
3. [13] We come under the centre of Government and thereafter we associate with anyone who has a water interface including inland waters. [14] So the RNLi, RYA, certifying authorities such as Yacht Designers and so forth ship builders and Harbour Masters again. [15] Anyone who has any form of jurisdiction and association on the coast. [16] LAs for by-laws, inland waterways for waterways, which we are helping to devise codes for school activity centres and with International laws we liaise with our counterparts. [17] There are about 172 signatures to the international Maritime Organisation which we have a right to inspect ships from visiting Nationalities as such they have a right to inspect our ships as well. [18] Periodically through a central data base held in France we check on vessels at least every six months at least a year and give them a check where they all have to be certified and so forth. [19] Yes, it is a huge task.
4. [20] Agencies government department or organisations might enhance the performance of the MCA. [21] Outside I do not think so. [22] I believe that we

do cross confer, although some of the organisation do change their responsibilities anyway and the Ministerial offices shift and you find that the boundaries shift as well. [23] The Environmental Agency and so forth or the HSE Health and Safety Executives we are on exactly the same footing as we have always been but we cross pollinate with all of those the unions. [24] They come in as well when I go to off shore meeting we bring the regulator, the Government, the Unions as you would expect and we bring the Industry into the same camp. [25] So the providers of ships and the operators of ships that work for the various industries come together with the regulators and the unions to ensure that with cross pollination we make the thing work. [26] No longer today do the Government say 'you will do this, this and this'. [27] There is an enormous amount of cross pollination and discussions where we ask about new codes of practice. [28] We have representatives from all sorts of people that have a coastal interest. [29] It could be 30 or 40 organisations that will be involved in drawing up a draft code of practice. [30] In the latest one we have done it has gone out to 600 other interested parties for their comments. [31] They are then looked at and embraced and then we reach a conservative opinion then we put it up front. [32] It is rare today for Government to say this. Conversation takes place at all levels and that is why it takes so long.

5. [33] Inevitable I think UK CAS responsibilities will be affected by incoming European recommendations and legislation. [34] At the moment in this country private leisure vessels do not necessarily have to be registered and does not necessarily have to be insured it does not have to have an identifier. [35] In a lot of other countries it does, they do have to prove some type of qualification for operating such a vessel. [36] In this country that is not the case our line is to try and get through to people through education and voluntary codes of practice. [37] Recommendations that we make we recommend that they follow and we do give an open advice on vessels but if it comes to enforcement there is none. [38] Apart from the by-laws on speed limits or restrictive areas around the coast. [39] This can be inland waters as well. [40] Apart from those a person can do, as he likes. [41] A twelve year old can take a 175 horsepower and go out and drive and not be susceptible even to the rule of the road.
  
6. [42] It is difficult to measure if central / and or local government policies and regulations are CAS effective. [43] I can say is that on an average weekend in on the UK coast perhaps 3 million take to the waters by boat or swimming or even climbing around our coast. [44] With 10,500 miles of coastline to effectively enforce would be extremely costly, as research has shown and would be a near impossibility. [45] In addition to that it would probably discourage a third of the 3 million people and then they would go back on the road. [46] I can see both sides of the equation. [47] I think people who go to sea, should have some form of training of the water environment in which they are driving and so on. [48] The boat owner feels that this is the last battleground of freedom and if you start to impose more costs on them by legislation a third would come off the water and go back on the road this would further chock the roads. [49] My feeling is with 10 people being killed every day on the road this may increase that figure unnecessarily. [50] On the coast 250 people lose their lives every year this includes suicide or those who wish to dive over the edge, this equates to  $\frac{3}{4}$  of a person every day but in relation to the 3500 that die on the roads a balance has to be struck and realised. [51] It would improve

safety on the water to insist on people having qualifications but the effort required would be enormous. [52] I think the Governments policy at present through voluntary and education is possibly effective if an overall balance to be maintained.

7. [53] Looking at mechanisms that you perceive may require updating or improvement. [54] About 2.5 to 3 years ago there was a committee that looked into coastal bylaws there were 59 recommendations that needed to be acted upon. [55] Zoning etc that may or may not be brought into the Governments proposed safety bill which is covering all aspects of transport or so I understand. [56] I think the line will be that LAs as they can now under the home office guidelines bring into effect by-laws to help enforce various jurisdictions on the water, speed, areas of operation, protection for bathers, and so forth. [57] I think all coastal local Authorities should have persons who are both responsible and qualified in dealing with water matters. [58] In my experience when going round the coast with the road show that was dealing with the introduction of departure safety code it was often a 5<sup>th</sup> hand that was given the job. [59] Often a young lady responsible for licensing taxis, clubs, pubs and giving extension to village halls and in one case they were looking after zoos. [60] Tacked on to the end of it the licensing of boats. [61] The girls and the boys had no specific training in boat cases they did not understand what codes and standards had to be reached. [62] I was called upon to try and help them out. [63] I believe that any LAs with a coastal frontage should have someone properly trained and given a much greater responsibility for happenings in the water if they are going to be effective. [64] I think water is a very low priority because the instigation is very small and they do not have the funding or resources to do it.
8. [65] I think planning and policy issues should be more available. [66] People like ROSPA have these great conferences they bring together managers of reservoirs rivers LAs all those that have an interest in water sports, national parks. [67] They talk about things like somebody being responsible to break all the ice near to lakes on a cold day so people will not try and go over it. [68] There are no resources to do it and is it justified. [69] There are properly more deaths in the home but water attracts kids like a magnet you can not boundary off every piece of water. [70] It will not matter how many phones or lifebuoys you put up they will be wrecked and vandalised. [71] I have had phones wrecked at my coastguard station. [72] It is a bottomless pit of resources in terms of people power and funding. [73] Ideally the greatest control is to leave it up to the parents. [74] The MCA are asking Government, LAs, and Agencies Civil Servants to replace what the parents should themselves. [75] It should be a parental responsibility that parents themselves should have proper training and then have proper control on what their kids do on the water. [76] They are asking Government to provide a role without the resources to do it.
9. [77] Poole harbour the water is well managed. [78] There are areas for sailing, bathing and motor boating. [79] Another extreme is Lake Windermere they are about to bring in a total ski restriction the last of the great lakes to have a ski restriction. [80] Totally the wrong way to do it. [81] Instead of sharing an area with all water sports they are saying no, nothing goes over 10 knots from now on. [82] So at one stroke they are doing away with motorboats, jet skiing. [83] These are the people that were feeding the chandlers that have grown up around the Windermere shopping complex. [84] This cannot be the way to do it there has to be

a sharing. [85] Dis-placement, Yes my argument exactly if you use an environmental law as an argument such as noise or pollution to remove some vessels then they will just migrate to another area where there is probably less suitability. [86] North Wales, Anglesey, jet skis were thoroughly managed. [87] One LA managed its water access through managed arteries in so doing by the control measures they actually displaced. [88] They insisted that those driving jet-skis had some training qualification and had insurance and that their vessels were identifiable. [89] Now that works generally especially for those that live in that area. [90] However there were others that did not want to pay fees and resented the enforcement and they migrated up to Anglesey. [91] Anglesey is very unhappy about it. [92] That is an example of how rigid enforcement in one place can place pressure unwittingly perhaps on to another. [93] In this case they were prepared to go on a 150mile round trip so they could fool around. [94] Than to pay and have proper qualification in an area that is well managed. [95] So therefore they have all got to come on board or these initiatives are not going to work. [96] It is no good having pockets of excellence and then pockets of nothing. [97] Because you will still get the baddies doing their thing and still get the same level of incidents and nuisance and more so in some areas.

10. [98] There will always be CAS saturation levels being exceeded in some locations. [99] The types of places that I just spoke about enforces the problem until in the end that area will have to do something, it will then move somewhere else. [100] In this country to my knowledge there are some 26,000 jet-skis now and there breeding. [101] If you go to the boat shows they are being sold all the time so they are here to stay. [102] The Sunday times campaign or one lady in particular who is really against jet-skis says it is a real headache, but it is like lorries on the road they need managing.

11. [103] I do not think it matters who disseminates SCP as long as someone does it. [104] You take the RYA they are the NGB for the sport of sailing they attract about 100,000 customers not an awfully large amount at all. [105] They are in it for commercial reason, but they are the leading NGB. [106] Now they operate commercially and they produce a huge amount of training courses and literature. [107] BSAC are recognised as the lead again. [108] But there are also other organisations who also believe that they have a lead aim. [109] BSAC themselves do not have enough staff to do everything and they are very diverse in location. [110] Now if you take something like the MCA they can cross all boundaries and they are Government funded and include diving, sailing and so on. [111] We consult and meet with all those organisation, so although the National Sporting Bodies represent I do not believe they have the resources and definitely do not have the powers to get across everything. [112] The MCA has people around the coast everywhere, not inland waterways that is different! [113] Around the 10,500 miles of coastline the MCA government sector manage all the way round. [114] We do cover all the schools all the marinas and all the harbours and bring these all together. [115] There are a lot of jealousies and competitiveness with other organisations. [116] They are in it for different reasons, status, or commercial venture. [117] They are all limited by resources. [118] They all have there own axes to grind. [119] If you have a Government Agency as a representative that will cross them all and meet them all. [120] The MCA get involved with every single one of them when we produce literature. [121] It is sponsored by Government, paid for by Government and ok 'ed by Government. [122] What I would like to see happen is for the MCA to pull it all



together. [123] How we can do that I am not so sure, I believe we do the best we can. [124] To cover the whole country, you need people to get there, how would you get to all these places, the MCA works with representatives around the whole country. [125] We know when something is coming on line or when something is failing. [126] We have people on the spot all the time and their job is to spread literature, do talks, visit people in there boats in there centres. [127] This is where you get a feeling for the whole thing and that is where you get feed back. [128] If the coastguard goes there and sees something that is weak he can immediately get someone down with the right literature to talk to the people and so forth he will be able to tell what is needed and where. [129] NGB to consider that they might be able to cover all aspects might become a huge task. [130] It is very geographically diverse that is the trouble. [131] It is a huge coastline to cover, the resources required are enormous!

12. [132] SCP an effective management tool. [133] One recommendation is that you go to a recognised training centre to get your training. [134] Take the industry start with BMF; if you buy a new jet-ski today you get an information package with it. [135] It is the second hand ones they change hands how do you catch those people? [136] At least with a car the registration changes with it. [137] Is he qualified to drive it? [138] I could sell you my jet ski today who knows? [139] I have to say that we do not even know how many boats there are out there. [140] We say anything from 1 million to 3.5 million we really do not know. [141] We do know about jet-skis because we get the statistics from the manufactures. [142] There are about 25,000 and that is in the last 10 years. [143] They do have an identifier for security other than that we do not have a clue who owns them. [144] We do not know what is out there. [145] For NGB to administer to all of these how would they contact them?
13. [146] Self-regulation is an effective management tool for all users of CAS. [147] At the boat show in London a man pays silly money about £8,000 for a jet-ski they are the most topical and are causing us the most trouble. [148] He can buy it pop it on the back of his trailer and take it down to the coast launch it. [149] How do you deal with this? [150] Is he going to be worried about a voluntary code of Practice or anything else NO. [151] You do not even know how to get to him you do not know who he is or where he comes from. [152] In some incidences we place coastguards at the artery motorways and stations. [153] We then talk to those with jet-skis in tow friendly advice and offer literature. [154] We try whether they read it or not is difficult to say how else can you reach them. [155] So when you say is voluntary regulation effective?
14. [156] In terms of voluntary education it is as good as you get we have hit all primary school and we aim to hit all secondary schools with a program or an integrated package for coastguards and teachers. [157] By video, if you get the kids then the kids in turn get the parents. [158] We have spoken to 100,000 in the production of this teaching package. [159] It is probably it is as good as you can get, in terms of effectiveness. [160] The MCA only had 113 coastguard incidents out of 15,000 that involved jet -skis and two of those died because they hit each other. [161] One death is still too much. [162] But on the whole this is quite small. [163] I have many letters that I have to answer on behalf of the chief executive that come via members of parliament and from the Prime Minister himself concerning the agro

caused by jet-skis. [164] The number is quite substantial. [165] Noisy and a threat, like snow boards on the ski-slopes you are never sure what they are going to do next.

15. [166] Financial strategies are like everything else if you could enforce it then yes it could be. [167] Do that you have to have registration, identification and you have to have enforcement.. [168] A lot of research has been conducted by Government to see if it is cost effective, and, as I said earlier no.
16. [169] I think 3<sup>rd</sup> party liability insurance should be mandatory. [170] I think insurance should be the first attack. [171] I think every Jet Ski should be able to prove control.
17. [172] Those who own them would rigorously oppose registration of craft. [173] Any type of Government interference is rigorously opposed and people would see it as another form of taxation.
18. [174] Transponders could be used; at the moment there are a number of factors on jet skis all of them do have, not necessarily a transponder, but by firing a gun at them they can get the number of it. [175] This is based on security could you have this? [176] It is again the cost. [177] First you have to maintain these things and you have to have someone there to recognise them. [178] If you find someone doing something that they should not have done you have to prove it. [179] That means you have to have people out there to actually ascertain speed! [180] A speeding craft is very difficult, particularly if you have a floating platform. [181] So what will it give you at the end, you have to have someone out there, and maintain and enforce these things. [182] It comes down to resource again and is it necessary. [183] If you have proper water management I do not think that it is necessary. [184] I think you would create an unnecessary cost; the manufactures could of course produce. [185] For instance, you have not got your transponder on. [186] The sea environment is so harsh it is the practicality of what it gives you. [187] Think fines and costs!!
19. [188] You would have to sell a voluntary 'overall' singular licence. [189] First you would need to bring all these people together and make sure they would cross pollinate. [190] They would have to come together with an agreed logbook. [192] It would need to be sold to the public. [193] You must ensure it could not be forged and also look at updating procedures. [194] It would be enormous. [195] I love initiatives like that but I know that in having dealt with these people over 20-30 years how difficult it would be to bring it together. [196] You will always get those that are responsible that would do that sort of thing but often the majority do not. [197] Most honest people have no quarrel about having their photo on their driving licence or with National Registration cards. [198] (Marine card) It would be a wonderful idea you could just have a stamp on it to say that you had done the various courses a common card issued from a government dept. [199] The RNLI have too much on their plate. [200] People hate regulation, though if it is voluntary it is worthwhile. [201] Apparently boating insurance is so small it is remarkably uncommitted. [202] To use this as a source of enforcement tool, we offered it to them and they said it just was not worth it. [203] It is so competitive and so small; people only want it at certain time of the year, because of lay up. [marine card] [204] The idea is tremendous. [205] I should like this introduced into schools, do you know that most

schools do not have swimming in the curriculum now? [206] Do not let me kill off an initiative like that though.

20. [207] In the Med they are trying to bring in regulation where any vessel must be registered and the drivers or pilot must have training. [208] France is also pushing for this. [209] France is very strong in their populous along the coast Italy and so forth. [210] This would mean that all commercial and private vessels must be properly registered and have correctly certificated personnel. [211] It will come, to the UK we may come kicking and screaming but there will be registration and training it is just a matter of time. [212] Boat owners in this country are just laid back they leave vessels unloved 10s of thousands of them in Marinas up and down the country. [213] When you talk to them they do not want any Government interference.
21. [214] Power source as a measure. [215] Yes that is not a bad way of doing it. [216] Size would need to come into it of course. [217] 13.7metres is generally the cut off, after this there is legislation that comes in. [218] With regard to fire fighting and so forth. [219] Non- commercial of course that way you are looking at ever-thing that functions out side of legislation. [220] Speed! Yes a fair segregation. [221] Under European legislation everything under 8meters is the cut-off.
22. [222] The MCA already conduct enforcement. [223] The MCA have their own vessels we have been tasked by industry to really get to grips with this. [224] In one legislative requirement (commercial vessel) we apprehended and took to court a person that had clearly broken the law in terms of safety, qualifications, the boat and so forth. [225] His fines were finally broken down on appeal to £8,000 and it cost us £50,000 to pursue it. [226] Now you need not necessarily measure that on an individual bases because the message got round and the fact that we had conducted an enforcement requirement did have a down stream or domino effect. [227] If you were a bean counter on what went in to what came out you would have difficulty telling the financiers that this is cost effective. [228] They would only see the £50,000 out and the £8,000 back. [229] In Government terms of treasury this is what you are up against, but we do prosecute far more than we did. [230] We do conduct investigations through the boats that are hired through agencies. [231] As a National policing body, again we are talking about 10.5 miles of coast line, it may be that customs, the police, the MCA even the ministry of boats could bring this all together. [233] But you are adding to the commercial list perhaps 3million craft. [234] How can we do it? [235] The LAs do what they can, but they have not the resource. [236] The only way you can do this is through revenue so you are back to your department for registration.
23. [237] LA to manage a coast effectively must bring all bodies together. [238] They must have agreement with boat owners, industry and harbour authorities. [239] If they are going to share the waters and use all the facilities then there must also be an agreement with the Environment Agency they must all come into the equation. [240] To cut off a piece of water in a town to 'become a centre of excellence for sailing, to do that they must go right a cross the board sharing it by time or space or some other way. [241] You cannot do it without bringing in all these authorities, it must be integrated. [242] At the end of it you are doing for Safety, and for Industry at the

end you must have a real driver. [243] Think diversity in LAs' aquatic centre of expertise, instead of tourism helter skelters.

24. [244] CAS management leading to significant economic savings for a region. [245] What we say on the road is £.75 million per day on the sea £2 million that is the figure that is general under Government measure. [246] You cannot put a cost on it at all but that is the one that we use. [247] A lot of things happen that we do not know, we do not have all the diving statistics, in fact trying to get a handle on all the incidents a lot of people do not bother. [248] We get our statistics from the police. [249] LAs do not bother it is very difficult. [250] We do not know the main cause of incidents and therefore do not know how to mitigate. [251] Diving is the worst thing. 24 –25 deaths a year. [252] More than fishing.

25. *Which agency or Government body do you believe should take up the challenge of producing a National framework that may assist in the harmonisation of CAS?*

26. [253] If I was to say that MCA was responsible for qualifications of the driver and the safety of the vessels. [254] Sport is another area if the vessel is safe and we ensure that the driver and crew are qualified for the activity. [255] It would be difficult to bring the whole lot together. [256] I still believe that we are right in having National Governing Bodies for the various sports themselves. [257] In terms of trying to get people to come under NGB and register with them and pick up their guidelines and practices this is something else altogether. [258] NGB should represent a sport but there are huge amounts of jealousies. [259] Agreement that they are costing people's lives. [260] For instance the RYA say come and do our courses do as we say, come and join our organisation but then on the other hand they say they do not want any jurisdiction for private leisure craft, therefore you have a dichotomy. [261] One of the reasons for being in their rational which says no more Government regulations, 30% of people who have a VHF radio do not have a licence from the Radio Communications Agency and that is now only £22.00. [262] You are supposed to show a sticker, we recommend that all boats have a radio, of which they mostly do because if they want to contact the harbour master they should have a licence, but 30% do not. .

**David Reid : British Surfing Association.****JULY 1<sup>ST</sup> 2002****Champions Yard: Penzance.**

1. [1] We are the National Governing Body for the sport of surfing. [2] Our organisation is accountable to its membership of which we have 5350. [3] We are a member of other organisations. [4] We have no funding given to us from the sports council or any other organisation at present. [5] Our only accountability is to the membership itself. [6] We are registered with the ISA, which is the International Surfing Association.
2. [7] We issue codes of conduct and codes of practice to all our members. [8] We have a National Surfing Centre that is located at Fistril Beach, Newquay. [9] We teach through our national coach Barrie Hall. [10] We teach lessons and we also teach instructors to teach, we have a recognised format to do so.
3. [11] I am the manager of the BSA although I have been in office for only a short time, my predecessor was Colin Wilson. [12] My job is to ensure the effective running of the BSA as the NGB for surfing. [13] I also organise events, sports, lessons, etc
4. [14] We integrate with those who I have discussed before. [15] As a sport we are independent of other organisations. [16] We try to integrate with the SLISA lifeguards etc, this where it is applicable etc. [17] We do ask advice from several people but invariably no we make our own decisions. [18] We have representatives with water safety groups, which pass information down to us.
5. [19] I think the biggest thing that the BSA lacks is funding. [20] We have to raise finances through membership or commercial activities or sponsorship. [21] We get no funding from the government. [22] We get no funding to send our National team to compete in International events. [23] In any direction from anywhere in Government, we would love to have their help. [24] It can cost several thousand pounds to go away compete and represent your country it is very expensive. [25] Luckily this year we have been lucky to find a sponsor Banta sun cream and they paid our team to go to the ISA world games.
6. [26] Yes, I think inevitably as more and more regulations become applicable to our sport then they will invariably affect us. [27] I think now it could only be for the better because any regulation that came out now would be on a safety element. [28] Like if you are instructing then you would be restricted to the amount of students that you can have. [29] I do not think we would be opposed to any safety legislation that would come through. [30] We hope Europe will stand firm on bathing water quality and improve our environment.
7. [31] I think people are happier in the water now than before because of the policies on pollution. [32] I think that has and still is one big issue that has affected everybody that goes into the water. [33] Several treatment plants have now been built in areas of the local country and that has helped to improve the environment in itself, but there are always more things that can be done to improve the environment. [34] Beach safety as well! Having Lifeguards on beaches is a good thing. [35] Unfortunately, not all LAs have lifeguards on the beaches so that is something that LAs should look into.

8. [36] I think there are things Yes definitely. [37] For instance, we are the National Governing Body for surfing in this country and we set in a procedure for people to have surf schools. [38] We now recognised 30 to 40 surf schools throughout the whole UK. [39] Furthermore we have a procedure to train people (teachers) now this it is not legislation and that is a problem. [40] Anybody can open a surf school, and there is no legislation at the moment to stop people from doing so. [41] I believe that there should be guidance for people who open surf school. [42] They do have to be on a register either with us or another body like us. [43] We are the NGB for the sport and are the only ones who provide a service. [44] They should have to be registered with us. [45] LAs can get a list from us in order they can give surf schools a licence to operate in those areas. [46] I think that this is important so that there is a consistency across the whole country in order that people can learn about safety and learn the sport as fast as possible.
9. [47] It would help if planning and policy issues were more transparent that is for sure. [48] Any legislation that comes through or recommendations if it were transparent then you know and things that affect us, we could have an input on. [49] At the moment we are registered with the UK Sports council and CCPR etc. [50] But the fact is we only hear about things that change after they have changed rather than being pro-active in helping them change in one direction or the other.
10. [51] I can't identify an overall effective multi-use UK CAS management system right now. [52] There is a possibility that you can function with other sports. [53] The BSA links up with many types of activities things that take place on the beach part of a genre called Action Sports whereon we have skateboarding, or with the surf lifeguards associations (SLSA). [54] We also get involved with surfing carnivals etc. [55] There is a link with other sports but I do believe that most sports are managed and are run independently of each other.
11. [56] In certain cases, we have to be aware of CAS saturation levels being exceeded in some locations. [57] Surfing is one of those sports that are becoming more and more popular and more and more people are going in the water. [58] I think we are a long way off that yet [59] In the future I can see that we will have overcrowded surf spots, some places in the world like Brazil, Japan or California.
12. [60] I believe National Sports Governing Bodies are the ideal vehicle for the dissemination of CAS Codes of Practice. [61] Because they can take in the information from all different areas and produce a set of criteria for all organisations to run their services or surf schools. [62] Also we could provide information to LAs as to how we run our surf schools and how surf safety should be performed and / or passed on to the people who participate in the sport. [63] I think SCP is can be an effective CAS management tool SCP can be very effective. [64] We have our sports codes of practice. [65] This mechanism could be improved by funding.
13. [66] You have to have self regulation within the individual organisations [67] Perhaps there should be an independent body that does regulate the Governing Bodies themselves. [68] The fact at the moment is that Surfing is a sport that is not recognised. [69] We had our funding withdrawn three years ago. [70] I think when they did that they only looked at one area of the criteria and looked at high

profile sports. [71] They have gone and funded high profile sports instead of looking at all the other things that sport can bring like safety practice and what cross over there is into other areas. [72] So I think the government should review that.

14. [73] Car park management as a financial strategy used as an effective management tool I do not think with surfing. [74] Surfers can go anywhere, there are no regulations for surfers to go anywhere with the exception of swimming areas and things like that. [75] It would be very difficult to impose financial strategies upon people. [76] It would be difficult to enforce because there is no one there to do the enforcing anyway. [77] Difficult to answer
15. [78] I think 3<sup>rd</sup> party liability insurance is very important all people who participate in water activities should have it. [79] The BSA provides 3<sup>rd</sup> party liability insurance, ourselves. [80] Other insurance companies do provide them. [81] I think this is important as it shows a responsible attitude to the sport.
16. [82] Yes registration of craft outside of surfing. [83] Powered craft when an incident occurs this would allow details to be taken. [84] Surfing itself it would not be practicable, there are so many surfboards around and people often have so many boards. [85] I could not see it working for everyone.
17. [86] Building up a data base contained on a singular marine card. [87] yes that is a possibility. [88] I could see that working, provided the courses followed approved guidelines [89] yes that would definitely work.
18. [90] Yes zoning policies as a management mechanism. [91] Swim zones they work to a point but only if you have good lifeguards on the beaches. [92] But not all beaches have lifeguards so there is not always separation in place. [93] Lifeguards that are not associated with surfing they tend to put the swim zones in the wrong locations. [95] Like in an area where the main surfing peaks are, then you are bound to get problems when surfers want to surf the peak. [96] Therefore, you have to have recognition from both the surfer and the lifeguards of the zoning area and how it works
19. [91] Yes! Power source management mechanism is good. [92] It is the wave that provides the power source for surfing.
20. [93] We are constantly reviewing our training courses. [94] This year we have changed our level one course to make it more efficient for the instructors to pass on more information and we constantly do that, a constant monitoring.
21. [94] Possibly yes the implementation of a central / regional coastal policing body. [95] It would be a good thing in some ways to have a central body, but whether it would deal with regional issues in a similar way, I don't know. [96] Many places are slightly different. [97] They would have to be careful with how regional difference was dealt with if they remained in one place. [98] It could help however because it would be only one body to approach.
22. [99] There is a rule laid down in surfing, so obviously we should like participants to follow our guidelines. [100] Those who are unaware of the guidelines or who have

not had any surf lessons may get caught in a rip and end up out the back and that is why accidents take place. [101] That is why it is important that we get hold of people at an early stage and be proactive in ensuring they take lessons at an early stage. [102] I don't think road rage really happens in surfing [103] I think people just get frustrated if people start to drop in on them a lot.

23. Agency or Government body take up National framework the harmonisation of CAS?

24. [104] Well the UK Sports council at the moment. [105] We have had little dealings with DEFRA. [106] Sport England is more associated with the English Surfing Federation or Welsh and so on. [107] They need to develop more plans to involve us, the BSA is dependent on the ESF for funding from Sport England.



**Sue Tolland DEFRA, Temple Quay House Bristol:**

**JULY 24<sup>th</sup> 2002 2.00pm**

**Head of Countryside Management**

1. [1] It is a huge role DEFRA this bit of it is the environment. [2] We are concerned with the enjoyment of the countryside and the conservation of the countryside. [3] We are accountable to parliament. [4] We do not have responsibilities defined to CAS. [5] We have two roles really, we have a role in encouraging people to enjoy the countryside and that includes water and recreation and coastal recreation, inland waters. [6] We also have a regulatory role that is giving LAs the powers to make sure that people behave themselves properly when they are in the country and in what they are doing. [7] I have worked for DEFRA, and I now have a funny title, in that I am an ex civil servant employed on part time basis. [8] I used to run a department here but now I am working on a self-employed basis. [9] I am responsible at the moment for the review of the powers on the coast and taking it forward. [10] Organisations we integrate with are other Government departments. [11] Department for Transport they used to have an interest in By-law on the coast as they would be responsible for shipping policy and how vessels behave themselves and so on. [12] It used to be home office then it went to DETR, which is what we all were. [13] It then went to DTLR but they have split again but I think it is the Dept of Transport, there is also the office of the Deputy Prime Minister they also have an interest. [14] People in this department also have an interest in things like nuisance; some of the discussions on the bylaw of the coast is the way that they come under nuisance. [15] Rather than a specific offence like going to fast on their jet skis they then would come under a different legislation which would be to do with noise and nuisance rather than the ones that I deal with, which is the management of coastal activities particularly.
2. [16] We also talk to MCA and Sport England because they have a role with respect to sport governing bodies. [17] The people we really miss out on which everyone does I suspect if you talk to them, is the individual people who don't belong to an organisation we do not have the means. [18] Getting our message across to them is very difficult, but that would be true for anybody who is not part of an organisation.
3. [19] Not that I am aware of UK CAS responsibilities to be affected by incoming European recommendations and legislation. [20] There are sort of general things like landscape conventions and changes in the planning system that might have an impact but there is nothing that we are aware of that is directed at.
4. [21] Most of the times yes central / and or local government policies and regulations are effective for the current CAS use. [22] There are a few problems; there are the occasional people who make a nuisance of themselves but in general yes. [23] Bylaws there is some tinkering that could be done, the reason that the bylaws need to be reconsidered is that when jet-skis came about they did not come fall in the regulations as 'vessels' but they do now. [24] I believe that now if LAs tried to enforce speed regulations for jet skis they could do it. [25] Where a number of years ago a number of LAs could not bring enforcement because the way that jet skis were designed they did not fall into the definition of a vessel. [26] The design has

changed, that is the industry has changed rather than us having to change the bylaws because of the definition. [27] Static buoyancy [28] There are some changes that can be made the guide will help a lot but there isn't a proper need in a change of law, but there is a pressing need for some authorities to get out there and be more proactive at managing the people that they have in their areas.

5. [29] In 1996 we sent out a document to LAs and anybody else who had an interest in recreation on the coast generally relevant to the coastal By-laws. [30] Lots of responses came back and as a result of the responses and the deliberations of the departmental working group, we came up with these proposals and 59 recommendations for actions. [31] Some of which are primary legislation and some that are voluntary actions on the part of sports governing bodies and Local Authorities. [32] That is the two at the moment. [33] We actually got stalled because as you imagine that came out in 1996 almost 3 ½ years ago, but there is no pressing need for change. [34] But there are things that have come up, like foot and mouth and ICZM. [35] (Have you spoken to Sam Roeberry)? [36] When these types of thing happen as you can see the review had to be put on the back burner. [37] Now we are working taking things forward again. [38] One of the more important recommendations was that there should be a guide for local authorities on their bylaw making powers. [39] What they can do under their by-laws. [40] Good practise! where one local authority has used their powers imaginatively for zoning and generally encouraging responsible behaviours there will be lessons there for other LAs. [41] I think the guide with education and encouragement rather than prescription. [42] Telling people how they should or should not behave. [43] I think the guide will be a step forward for those local authorities that seem to be behind on managing recreation. [44] We have just put out for tender for private sector to take this guide on.
6. [45] Are all planning and policy issues that are relevant to the coastal zone not transparent now! [46] That is not really planning policy that is more organisation. [47] Yes more information is always a good thing or even greater clarity. [48] Perhaps better presentation.
7. [50] No, I can-not identify an overall effective multi-use CAS management system currently available in the UK. [51] The reason is because we do not look at what is going on. on the ground. [52] Dorset I believe has some good management practices, but I could not tell you how they operated, you will need to talk to them about that, we are up here we do not get involved in day to day management on the coast. [53] I am not aware of CAS saturation levels being exceeded in some locations for the same reason, because we do not get involved, we do not look at individual areas.
8. [54] I do not have a view, about National Sports Governing Bodies being the ideal vehicle for the dissemination of CAS Codes of Practice. [55] I do not know, but you do need something, as a way to get information out especially when you do not know whom all the individuals are.
9. [56] Yes. The dissemination of CAS Codes of Practice may not be currently effective because it is difficult to get at individuals that do not belong to any organisation. [57] The dissemination mechanism could be improved by Magazine articles, better

publicity, information boards where people go to do recreational activities. [58] There is talk about when you buy a jet-ski you receive a booklet on the do's and don'ts. [59] But that does not really mean very much because you cannot guarantee that people read then and also hire skis' when you hire a jet ski you want to get out on it not sit and read a book.

10. [60] Yes, SCP is probably an effective management tool probably it is but backed up with the bylaw powers. [61] For LAs where people do not obey, the threat of action under a by law even if it doe's not go to court, is sufficient for most people to be discouraged. [62] Most people behave properly anyway, just individuals.
11. [63] Yes financial strategies have their role to play as an effective management tool. [64] 3<sup>rd</sup> party liability insurance as a responsibility measure for CAS participation is not a government policy at the moment. [65] It is up to LAs if they want to in their launch sites and in their licensing arrangements if they want to introduce 3<sup>rd</sup> part insurance then they can do so. [66] There is not a national governmental policy at the moment about that. [67] You could only licence mechanically propelled vehicles anyway you could not licence things that float or skims on the water could you? [68] We do not require 3<sup>rd</sup> party liability for bicycles? Motor vehicles! [69] A craft with a motor on it now there may be a case. [70] I think you need to look at all sorts of activities if you are going to do it on the coast, think bicycles or horses for instance they can cause damage but there is absolutely no requirement for 3<sup>rd</sup> liability insurance. [71] There is no compulsion,
12. [72] Again there is no government policy for craft to be registered. [73] The problem is both catching and identifying the people. [74] First identifying that they are committing an offence, it is difficult to assess if they are speeding or not as water is a different medium than land based assessment procedures. [75] If you do it would be difficult for LAs to catch up with them. [76] Clearly it would be nice if they were identifiable. [77] It always seems to be jet-skis that have problems, but you could not confine identifications just to the Jet Ski. *Interested in security tagging.* [78] No views on a voluntary 'overall' singular licence available for CAS participants
13. [79] Again I mentioned earlier that educating and training are the best ways forward, agencies like Sport England they would be the obvious mechanism to run training schemes along with SGB, perhaps LAs could do these to in their own areas.
14. *Opinion to the implementation of a central / regional coastal policing body? Or the extension of responsibility to another pre-existing agency*
15. [80] What is wrong with the police? [81] No I can't see that another agency is needed to operate in the coastal zone.
16. [82] Why do we need a National framework? The Irish strategy, MCA RNLI Sport England all these agencies have different aims though? [83] Our guide and the people who are producing the guide are talking to these bodies. [84] The RYA is producing something as well. [85] Yes it could be confusing. [86] Ours will be as it is from central government the definitive role where there is concern for the law, and what local Authorities can and cannot do and what individuals' role is and sport governing bodies' role is. [87] And our contractors, whoever they are will talk to others who have an interest but I suspect it will be difficult to get somebody like the

RNLI or the RYA not to produce their own guidance, that is just because they will want to do it. [88] I suspect they would feel that they are not acting if they did not produce material for which there was a demand somewhere. [89] We cannot tell them what to produce. [90] We can influence the MCA because we work with them very closely anyway, we do know what they are doing and they know what we are doing, we do not produce conflicting information. [91] It is difficult with the funding from Sport England because if you start to tie all their grant to what or only if they do things that you want them to do then you are entering dangerous territory. [92] We do fund people that the government does disagree with, or that those organisation bodies are giving the government a hard time over something. [93] I do not think it would be in our interest if we said that they could only do what we want them to do!

*17. Discussion of NGOs, BSAC - PADI. Discussions of who is the NGO and that if Government suggest that NGOs are the vehicle for dissemination for SCP then clarity of the NGOs should be made and funding should be in place to ensure that arguments cease between organisations.*

18. [94] Yes I see what you mean and that is unsatisfactory yes if two bodies are claiming authority which any one of them can have and then there is a constant threat that the right information is not getting out on to the ground. [95] Then this needs to be sorted and I would think that it is Sport England that ought to sort it, even if they are funding one of them. [96] There is also the Central Council for Physical Recreation they bring many SGB together than I have ever heard of. [97] So may be they are having a role too.

**JERRY URDLEY;**

**The Legal Department of the RYA.**

**Telephone Interview. 25<sup>th</sup> JUNE 2002 10AM**

1. [1] The primary role of the RYA and to whom the RYA is accountable can be answered by viewing our web site. [2] The RYA is the National Governing Body for Sailing, Windsurfing and Power boating. [3] My role is with the legal department. [3] The RYA are integrated with everybody, all relevant to the marine & coastal, and also enclosed waterways such as Lake Windermere. [4] Which is in itself unusual because it has right of navigation. [5] However, watercourses and rivers such as the Thames, the public access is subject to licensing.
2. [6] The RYA has been around for 167 years and during that period has established good working links with all, for instance the MCA- EA-NCA and RNLI and also has representation with LAs HA and Local Government Associations. [7] The arms of Government the DTR now known as DEFRA and also involves itself with environmental organisations such as EWD a sister division, the RYA actively contributed to Natura 2000.
3. [[8] Yes, for instance Integrated Coastal Zone Management 'Sam Robery DEFRA Ashbury House Victoria Street will be relevant, although this is non-static. [9] The UK government take of European Directives with Gusto, 'they go to town once they are implemented, which is not a bad thing. [10] The Water Quality Directive a very important and relevant directive that has found its way down from Europe, also the more technical the Recreational Craft Directive, for instance of the manufacturing of some crafts, emission standards and noise controls. [11] Importantly the use of directives increasingly to control pesticides that find there way into the marine environment and the convention on the restriction of the use of anti-fouling paints.
4. [12] There is a bewildering set of statutory and non-statutory mechanisms currently in place that require detailed attentions in order to understand the overall complexities. [13] The UK will do what it is told by the European communities, and follows up implementation with a system. [14] Pay close attentions to the Government amending strategies, there is a direct link with former working policies, look at the white paper Marine Stewardship: Safe guarding our seas.
5. [15] Need a change of the inshore zone and associated management structures, 100s becoming specialized, - often entrenched they influence the way things are done. [16] Need 'stakeholder' consultations to ensure the carrying out of duties and obligations that exist, extending the net as so to speak the way that Nature Agencies and Environmental managers are involved and the way that LAs that are coastal authorities now employ beach managers and leisure managers. [17] The range of bylaws are not satisfactory, 1837 overdue for polishing. [18] Dorset Coastal Forum are striking forward in some areas
6. [19] Yes I am aware of CAS saturation levels being exceeded in some locations

7. [20] There are statistics to suggest that currently sales of sailing vessels are in decline, although the sales of fuel powered craft are increasing. [21] There are issues of crowding, especially on holiday beaches. [22] The in situ legal powers do not meet the needs of modern marine management. [23] The productions of bylaw guidance are only a stopgap measure. [24] Bylaws do need to be brought up to date [25] The general understanding from the Government is a deal that we assume responsibility for CAS this is regarded as part of our constituency – look after CAS + Marine environment.
8. [26] I can not speak for those who go on holiday! this may be a reason that the overall dissemination of CAS Codes of Practice may not be currently effective. [27] Clubs are an important part of the process, they play an important role. [28] There is also an important role for those who market or the commercial sector. [29] For example a Commercial dealer – will work with the BMIF to make sure that PWC participants get a pack of relevant information. [30] These contain advice to the attendance of the participant to one of the specially designed RYA courses.
9. [31] Yes I believe that SCP is an effective CAS management tool. [32] Self-regulation is a concept not a tool, this is about the attitude towards the way participants of CAS approach responsibility; will not be able to do all. [33] 'Recruiting responsibility, difficult, social demographic changes, need to strike a balance analytical changes. This is a difficult! [34] This needs more research because of 'social patterns'. [35] The 2<sup>nd</sup> hand market for instance has an effect, [36] Inappropriate role models such as Jeremy Clarke, the way he speeds up to shore. [37] Also the scruff and sorted attitude is non-sympathetic. [38] The marine leisure sector needs people to have a good time and have mutual respect for each other.
10. [40] Insurance is difficult in the marine sector! Mechanisms yes 'Road' compulsory is applicable. Now too the marine environment superficially yes, however the legal issues are complicated, the insurance of ships and liability influences are subject to International rights, this is very complex and these influences need to be understood. [41] Also Nature conservation, the House of Lords Debate International Navigation Rights. [42] The balance between hands off attitude, in the insurance of ships, [43] A stronger case for treating small fast powerful crafts launched from the shore in a similar way that car drivers are. [44] Obligations - local rules could enforce conditions for marine launch!
11. [45] The registration of craft is potentially un-necessary, the administrative task of doing it is enormous we will need to justify this to users, and balance with potential costs to be recovered. [46] Not keen for this to happen, yet could be viable at a local level!
12. [47] Opinion on a voluntary singular licence available for CAS participants will need justification of benefit and cost! [48] Only those who are not competent or confident in their activity would oppose this idea, as a voluntary measure yes could work! [49] Similar to driving license swipe card, informative could self perpetuate! [50] Interesting option. There is a case for something like that especially for small fast craft launching from shore, basic competence levels! [51] Bulk of activities have a strong

ethic that requires you to behave in your boat you are criticised and frowned on by others, the 'Told Off' ethic, again respect to others.

13. [52] Zoning policies are planning issues and tend to get mixed up, sailing for instance and power craft! There is an increase of motor craft!
14. [53] Speeds quite sensible, useful categorisation for measurement. Need and relevant. [54] Use geographic site. I.e. type of area, for sample as well.
15. [54] Possible the RYA for education and increased training resources as a management mechanism they are more effective at looking at marine leisure sectors, they get involved with other activities. [55] However now risks are becoming more accountable. [56] Perhaps the Sports Council, they deal with the management of sport design and the administration of competition practices.
16. [57] The implementation of a central / regional coastal policing body is problematic. [58] On the open coastline this would be very difficult. [59] I do agree but there is no authority to do it, also very little expertise in these areas. [60] Who should enforce, perhaps Local Authorities should have a 'regulatory function' in pocket areas. [61] We need to improve the enforcement of rules in busy areas. [62] Yes we need to become more knitted together. ICZM
17. [63] Sam Roeberry, new Department in DEFRA looking at ICZM. [64] This is very important for the reduction of duplication it is non antagonistic. [65] Non-Static this is very relevant to the current marine status.
18. *Agency or Government body do you believe should take up the challenge of producing a National framework that may assist in the harmonisation of CAS?*
19. [64] Sport England as a core has no role, proffer funding for medals they are grant aides, they provide the mechanisms for youth training schemes to produce International teams. [65] This would need to include a wider aspect if considered; Sport is just too influenced by ideology, competitive only! [66] There are no real policies for coastal sport! [67] It is managed by the Sports sector, which is Sport England of which we have discussed. [68] Whilst recreational activity management is through Bylaw power, Local Authorities, the land margin and DEFRA. [69] It has currently has a twin approach. Think of Devonport. And the Governance of Ports: Port safety, Efficiency & the need to be accountable to stakeholders. [70] In the ports because they are busy areas, they have the power to regulate the uses of the port. [71] The river Hamble, difference of inland waterways, Port police, staff, enforcement of speeding
20. [72] Issues are becoming evident to a European marine safety standard for leisure craft. [73] The International 'nuisance' Craft Directive for the reduction of noise pollution, these are supplying 'bits' of legislation. [74] The UK has three legs from which they appear to make a stand. [75] That is Social Inclusion; Sustainable Development and Integrated Transport. [76] European Boating Association working in this area, Northern Europe, forging closer links

**Fiona Wood, Dept Culture, Media and Sport.**

**Tuesday 16<sup>th</sup> July 2002 Coxspur Street. London SW1**

1. [1] The primary role of DCMS and Sports in DCMS is developing and working through Government policy on sport. [2] It is mainly dealing with policy matters per say. [3] Rather than the hands on, the way that Sport England does, which deals with sport at the main grass roots. [4] We are here to formulate and put forward Government policy for sport. [5] We are accountable to the department and the general public through that.
2. [6] Our responsibilities defined to CAS are very arms length to be perfectly honest. [7] We really only hear about coastal matters from other governmental departments like DEFRA. [8] Or through correspondence from members of parliament, from NGBs possibly. [9] Sport England not so much because they are really the primary focus for it. [10] Also we hear from members of the public. [11] My responsibility is working with other Government departments, GB and Sport England to look at and work on water recreation policy.
3. [12] I think we would like to see more co-operations with water companies. [13] It seems that the Environment Agency is becoming more involved in the work that we have done with DEFRA on water recreation. [14] We would really like to see this kind of commitment from water companies; we think they have an awful lot to offer in that area. [15] Commercial not so much they are not an area that this department would work with face to face. [16] Commercial probably more Sport England they would have a more face to face integration than we would do.
4. [17] I think UK CAS responsibilities are bound to be affected by incoming European recommendations and legislation. [18] I think they will almost certainly, they will be something that we will be unable to avoid becoming part of. [19] How they will affect us I am unclear as yet but we will certainly have an involvement in that.
5. [20] Judging from the correspondence that we have received from members of parliament and members of the public I would say central / and or local government policies and regulations are not effective for the current CAS use. [21] People do not seem to be aware of coastal bylaws at all and they don't seem to think that they are very effective.
6. [22] I think there should be a greater awareness for the general public and other interested bodies of planning and policy issues relevant to the coastal zone. [23] And certainly they should be more easy to understand and more transparent.
7. [24] Not aware of an overall effective multi-use CAS management system myself. [25] The recent research carried out by the University of Brighton started by DEFRA gave us a greater understanding of the take up of water recreation of all kinds and it is something that we can use in the future and will find quite useful.



8. [26] We think in working together with NGB they have a crucial role to play in the dissemination of CAS Codes of Practice. [27] I am not really aware that the dissemination of CAS Codes of Practice may not be currently effective. [28] I know that with many of the NGBs their members are very knowledgeable about how SCP works. [29] It is the informal users that do not know how SCP works. [30] They are not really mindful or regarding of those SCP when they partake in water recreation. [31] It is possible that Industry could help in the disseminating SCP.
9. [32] Not quite sure that self-regulation is an effective management tool for all users of CAS. [33] We would support the NGBs taking a bigger role and also LAs taking a more active role in that sort of thing. [34] Some types of financial strategies may increase participation rates. [35] We are certainly noticing now in our correspondence that 3<sup>rd</sup> party liability insurance is the sort of thing that is becoming more and more prevalent. [36] Certainly companies that participate in water activities such as jet-bikes and that sort of thing are becoming more aware of the need to have that.
10. [37] Not aware of registration of craft at all. [38] I am not sure how practical that could be or how we could enforce that. [39] It is something that could be considered but I am not sure about the practicability of that one. [40] Certainly a voluntary 'overall' singular licence available for CAS participants is a very interesting idea. [41] I would be very interested to hear some more about that. [42] I support zoning policies as a management mechanism in principle. [43] It is very hard on the ground to enforce. [43] Infrastructure planning as a means of CAS management is something we should like to leave to LAs in liaison with Sport England to look at the practicalities of that. [44] They will need to take on local needs and what local peoples' opinions are.
11. [45] Education and increased training resources again this would fall to the NGB. [46] Again you will probably lose the occasional users that are not going to be a factor in that at all. [47] Commercial companies might take this on board.
12. [48] The implementation of a central / regional coastal policing body is an interesting idea. [49] I think there would be lots of difficulties of who would have the responsibility for that and the funding aspects. [50] Of course the practicalities they would not be able to be everywhere at once in a time when they are needed.
13. [51] In a word yes effective planning for the marine CAS resource should derive from integrated structures involving all relevant bodies. [52] It should be all stakeholders involved in those planning and consultation documents, and be able to contribute to that process. [53] Certainly stakeholders like NGBs, users and local people.
14. [54] ICZM and the development of horizontal as well as vertical information systems to assist in the effective management of CAS is something that we do not get involved in here.
15. Implementation of effective CAS management programs / structures and policies will eventuate in significant economic savings for a region. Discussions to RNLI

16. [55] I think it is very hard to say. [56] Yes that is incredible. [57] I suppose there would be an impact on tourism and people who would not want to go there or use that facility and go somewhere else because of the fear of that.
17. The agency or Government body to take up the challenge of producing a National framework that may assist in the harmonisation of CAS. [58] Spins immediately to mind DEFRA as they have the most expertise in that area. [59] Obviously they would have to consult with us Sport England and other NGBs that have an interest as well as other bodies that have an interest in water. [60] There does not seem to be one body/person that could take this forward. [61] We had a similar problem with the open space issues. [62] It was felt that there should be a government department that would forward open-spaces issues. [63] We deal with playing fields on this side and Offices of the Dept Prime Minister deal with planning and they have an interest in playing fields policy. [64] DFES also have an interest in playing fields so it is spread around it is very difficult to say. [65] Ideally there would be a government body for everyone, but I do not think that is practicable for Government that there is a single body for each discipline. [66] It would set a precedent, there are so many people that have to be involved with water issues and for someone to be able to contact all those people it is not practicable. [67] Because sometime they miss some people that may have good input. [68] Certainly it is doing the groundwork and knowing who to consult that is important really. [69] We often have to fight quite vehemently to be included in some discussions although this not specific to water in particular. [70] But we often have to fight for input because we are often overlooked in discussion processes. [71] Central council for Physical recreation is the umbrella body for all the NGBs for sport they have a function to take on and assist the NGBs of sport, but how active they are I do not know.
18. *Discussions on NGBs in particular BSA. Who stated they received no funding at all!* [72] Yes there is a worrying gap, the larger population i.e. casual user is being ignored, *Discussion of government drive towards a healthier Nation and the growth of obesity and perceived future pressure on health service.* Agreement I am concerned about this.



**Statistical Tables**

**Tables 5.1 – 5.63**

**Tables 6.1 – 6.62**

**Table 5.3      Age Range of Sample**

Age	Frequency	Percent %
16 - 25	46	22.0
26 - 35	69	33.0
36 - 45	59	28.0
46+	35	17.0
Total	209	100.0

**Table 5.4      CAS Age range Wind Powered – Wave Powered**

There is no difference between age range and type of power source  
There is a significant difference between wave and wind powered activity and age range of participant.

	Powered	N	Mean	Std. Deviation	Std. Error Mean
Age	Wave	85	2.1176	1.03982	.11278
	Wind	61	2.7213	.96835	.12398

**Independent Samples Test**

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2- tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Age	Equal variances assumed	.192	.662	3.560	144	.001	-.6037	.16959	-.93888	-.26845
	Equal variances not assumed			3.602	134.567	.000	-.6037	.16761	-.93515	-.27218

**Table 5.5      CAS Age Range-Location**

There is no difference between age range and the location of interview  
There is a significant difference between age range and the location of interview

			Age				Total
			16-25	26-35	36-45	46	
Location	Falmouth	Count	4	11	13	16	44
		Expected Count	9.7	14.5	12.4	7.4	44.0
		Residual	-5.7	-3.5	.6	8.6	
	Plymouth	Count	0	4	4	5	13
		Expected Count	2.9	4.3	3.7	2.2	13.0
		Residual	-2.9	-.3	.3	2.8	
	Newquay	Count	30	30	14	6	80
		Expected Count	17.6	26.4	22.6	13.4	80.0
		Residual	12.4	3.6	-8.6	-7.4	
	Penwith-Marazion	Count	8	13	15	1	37
		Expected Count	8.1	12.2	10.4	6.2	37.0
		Residual	-.1	.8	4.6	-5.2	
	Carrick St Agnes	Count	4	11	13	7	35
		Expected Count	7.7	11.6	9.9	5.9	35.0
		Residual	-3.7	-.6	3.1	1.1	
Total		Count	46	69	59	35	209
		Expected Count	46.0	69.0	59.0	35.0	209.0

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	46.868(a)	12	.000
Likelihood Ratio	49.672	12	.000
Linear-by-Linear Association	5.047	1	.025
N of Valid Cases	209		

**Table 5.6      Gender Grouping of Sample**

	Frequency	Percent %
Male	175	84
Female	34	17

**Table 5.7 CAS Gender – Preference of Activity Type**  
 There was a significant association between gender and preference for the different types of CAS

			Total											
			Swim	Body board	Long board	Short board	Canoe	Windsurf	Sailboat	Jet ski	Power boat	Sub aqua	Angler	
Fe/Male	Male	Count	9	19	26	23	9	26	24	7	9	10	12	175
		Expected Count	15.1	19.3	22.6	20.9	8.4	26.8	23.4	7.5	9.2	10.0	10.9	175.0
		Residual	-6.1	-.3	3.4	2.1	.6	-.8	.6	-.5	-.2	.0	1.1	
	Female	Count	9	4	1	2	1	6	4	2	2	2	1	34
		Expected Count	2.9	3.7	4.4	4.1	1.6	5.2	4.6	1.5	1.8	2.0	2.1	34.0
		Residual	6.1	.3	-3.4	-2.1	-.6	.8	-.6	.5	.2	.0	-1.1	
	Total	Count	18	23	27	25	10	32	28	9	11	12	13	209
		Expected Count	18.0	23.0	27.0	25.0	10.0	32.0	28.0	9.0	11.0	12.0	13.0	209.0

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	21.116(a)	11	.032
Likelihood Ratio	18.745	11	.066
Linear-by-Linear Association	1.414	1	.234
N of Valid Cases	209		

**Table 5.8 Visitors – Resident Respondent Grouping**

	Frequency	Percent %
Visitor	124	59
Resident	85	41

**Table 5.9 Visitor and Local Groups in Relation to Ability**

There was a significant difference between the observed and expected frequency of visitors and residents and the three levels of ability. Visitors were more likely to be of a beginner or an intermediate level than residents.

			Ability			Total
			Beginner	Intermediate	Experienced	
Visitor Resident	Visitor	Count	24	43	57	124
		Expected	19.6	36.8	67.6	124.0
		Count				
	Resident	Residual	4.4	6.2	-10.6	
		Count	9	19	57	85
		Expected	13.4	25.2	46.4	85.0
	Total	Count	-4.4	-6.2	10.6	
		Count	33	62	114	209
		Expected	33.0	62.0	114.0	209.0
	Count					

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	9.150(a)	2	.010
Likelihood Ratio	9.292	2	.010
Linear-by-Linear Association	8.089	1	.004
N of Valid Cases	209		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 13.42.

**Table 5.10 Car Ownership Respondent Grouping**

	Frequency	Percent
Yes	174	83
No	35	17
Total	209	100.0

**Table 5.11 Respondent Perception of Self – Ability**

Ability	Frequency	Valid %
Beginner	33	16
Intermediate	62	30
Experienced	114	55

**Table 5.12 CAS Participant Age Group and Perception of Ability**

There was a significant association between CAS participant ability and age range

			Age				Total
			16-25	26-35	36-45	46	
Ability	Beginner	Count	11	16	5	1	33
		Expected Count	7.3	10.9	9.3	5.5	33.0
		Residual	3.7	5.1	-4.3	-4.5	
	Intermediate	Count	19	20	17	6	62
		Expected Count	13.6	20.5	17.5	10.4	62.0
		Residual	5.4	-.5	-.5	-4.4	
	Experienced	Count	16	33	37	28	114
		Expected Count	25.1	37.6	32.2	19.1	114.0
		Residual	-9.1	-4.6	4.8	8.9	
Total	Count		46	69	59	35	209
	Expected Count		46.0	69.0	59.0	35.0	209.0

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	22.741(a)	6	.001
Likelihood Ratio	24.566	6	.000
Linear-by-Linear Association	20.234	1	.000
N of Valid Cases	209		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 5.53.



**Table 5.13      Respondent Perceptions of Escape as a Desired Quality of their CAS**

Escape	Frequency	Valid Percent
Strongly Agree	49	23
Agree	103	50
Undecided	12	6
Disagree	43	21
Strongly Disagree	2	1.0

**Table 5.14      Resident and Visitor Perceptions of Escapism**

There was a significant difference between the observed and expected frequency of local and visitor perceptions of escapism as a quality of the CAS Local participants are significantly (Chi-Square ( $\chi^2$ )  $p=0.05$ ).less likely to perceive escapism as a quality of CAS experience.

		Q1ESC			Total
		1.00	2.00	3.00	
Local    Yes	Count	61	2	24	87
	Expected Count	63.3	5.0	18.7	87.0
	Residual	-2.3	-3.0	5.3	
	Count	91	10	21	122
	Expected Count	88.7	7.0	26.3	122.0
	Residual	2.3	3.0	-5.3	
Total	Count	152	12	45	209
	Expected Count	152.0	12.0	45.0	209.0

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.755(a)	2	.056
Likelihood Ratio	6.093	2	.048
Linear-by-Linear Association	1.638	1	.201
N of Valid Cases	209		

a 1 cells (16.7%) have expected count less than 5. The minimum expected count is 5.00.

**Table 5.15      Respondent Perceptions of ‘Others’ as a Desired Quality of their CAS**

Others (Friends etc)	Frequency	Valid Percent
Strongly agree	22	11
Agree	147	70
Undecided	9	4
Disagree	28	13
Strongly disagree	3	1.4

**Table 5.16     Local and Visitor Perceptions of Others**

There was a significant difference between the observed and expected frequency of local and visitor perceptions of others as a quality of the CAS experience. Local participants' are less likely to perceive escapism as a quality of CAS experience

			Q1OTHER			Total
			1.00	2.00	3.00	
Local	Yes	Count	68	1	18	87
		Expected Count	70.3	3.7	12.9	87.0
		Residual	-2.3	-2.7	5.1	
	No	Count	101	8	13	122
		Expected Count	98.7	5.3	18.1	122.0
		Residual	2.3	2.7	-5.1	
Total	Count		169	9	31	209
	Expected Count		169.0	9.0	31.0	209.0

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	7.031(a)	2	.030
Likelihood Ratio	7.604	2	.022
Linear-by-Linear Association	2.085	1	.149
N of Valid Cases	209		

**Table 5.17     Respondent Perceptions of Competition as a Desired CAS Quality**

Competition	Frequency	Valid Percent
Strongly agree	12	6
Agree	62	30
Undecided	26	12
Disagree	96	46
Strongly disagree	13	6

**Table 5.18     Respondent Perceptions of Exercise as a Desired CAS Quality**

Exercise	Frequency	Valid Percent
Strongly agree	39	18.7
Agree	136	65.1
Undecided	9	4.3
Disagree	23	11.0
Strongly disagree	2	1.0

**Table 5.19     Respondent Perceptions of Culture as a Desired CAS Quality**

Undecided	13	6
Disagree	5	2
Strongly Disagree	1	0
Agree	128	61

**Table 5.20      Respondent Perceptions of Culture in Relation to Ability**

There was a significant difference between the observed and expected frequency of participant perceptions of culture as a quality of the CAS experience and the three levels of ability. Beginners and intermediate participants are significantly more likely to perceive culture as a quality of CAS experience.

			Culture					Total
			SA	A	UD	DA	SDA	
Ability	Beginner	Count	7	20	3	3	0	33
		Expected Count	4.9	20.2	2.1	4.9	.9	33.0
		Residual	2.1	-.2	.9	-1.9	-.9	
	Intermediate	Count	12	31	6	13	0	62
		Expected Count	9.2	38.0	3.9	9.2	1.8	62.0
		Residual	2.8	-7.0	2.1	3.8	-1.8	
	Experienced	Count	12	77	4	15	6	114
		Expected Count	16.9	69.8	7.1	16.9	3.3	114.0
		Residual	-4.9	7.2	-3.1	-1.9	2.7	
Total	Count	31	128	13	31	6	209	
	Expected Count	31.0	128.0	13.0	31.0	6.0	209.0	

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	15.705(a)	8	.047
Likelihood Ratio	17.991	8	.021
Linear-by-Linear Association	1.725	1	.189
N of Valid Cases	209		

**Table 5.21      Respondent Perceptions of 'Personal' as a Desired CAS Quality**

Personal	Frequency	Valid Percent
Strongly agree	85	41
Agree	112	54
Undecided	5	2
Disagree	5	2
Strongly disagree	2	1

**Table 5.22      Importance Factors Affecting CAS Participation**

Friends	34	16.3	175	83.7
Personal Equipment	16	7.7	193	92.3
Importance	Low	%	High	%
Other People's Ability	91	43.5	118	56.5
Other People's Attitude	33	15.8	176	84.2
Weather & Sea Conditions	12	5.7	197	94.3
Other People's Craft	33	15.8	176	84.2
Overcrowding of Site	18	8.6	191	91.4
Visual Environment	21	10.0	188	90.5

**Table 5.23 and 24     Respondent Perception of Attitude and Ability in Relation to Interview Location**

The Mann-Whitney U test found that the importance of other people's ability and attitude to CAS participants from the location of Falmouth was significantly higher than that for CAS participants interviewed at the locations of Marazion,

Ranks				
Location		N	Mean Rank	Sum of Ranks
IMATT1	Falmouth	44	46.16	2031.00
	Penwith-Marazion	37	34.86	1290.00
	Total	81		
IMAB1	Falmouth	44	46.80	2059.00
	Penwith-Marazion	37	34.11	1262.00
	Total	81		

Test Statistics <sup>a</sup>		
	IMATT1	IMAB1
Mann-Whitney U	587.000	559.000
Wilcoxon W	1290.000	1262.000
Z	-3.286	-2.890
Asymp. Sig. (2-tailed)	.001	.004

a. Grouping Variable: Location

**Table 5.25     Importance Scores of Other People's Craft Versus CAS Participant Beginner and Intermediate Abilities**

The Mann-Whitney U test found that the importance of other people's craft to CAS participants of intermediate abilities was significantly higher than for beginner participants of human powered CAS.

Test Statistics <sup>a</sup>	
	Craft
Mann-Whitney U	577.000
Wilcoxon W	1138.000
Z	-3.652
Asymp. Sig. (2-tailed)	.000

a. Grouping Variable: Ability

**Table 5.26     Respondent Perceptions of Risk Factors**

Risk Factor	Low	%	High	%
Other People's Ability	35	16.7	174	83.3
Other People's Attitude	32	15.3	177	84.7
Weather & Sea Conditions	24	11.5	185	88.5
Other Types of Craft	46	22	163	78
Overcrowding of Site	21	10	188	90

**Table 5.27 Participant Perception of Risk in Relation to Ability, Attitude and Crowding –Location**

The Mann-Whitney U test found that the perceived risk scores of CAS participants from Newquay associated with ability attitude and crowding was significantly higher than those from Marazion.

	Location	N	Mean Rank	Sum of Ranks
Risk ability	Newquay	80	64.81	5185.00
	Penwith-Marazion	37	46.43	1718.00
	Total	117		
Risk attitude	Newquay	80	63.01	5041.00
	Penwith-Marazion	37	50.32	1862.00
	Total	117		
Risk crowd	Newquay	80	64.41	5153.00
	Penwith-Marazion	37	47.30	1750.00
	Total	117		

	Risk ability	Risk attitude	Risk crowd
Mann-Whitney U	1015.000	1159.000	1047.000
Wilcoxon W	1718.000	1862.000	1750.000
Z	-2.895	-1.982	-2.772
Asymp. Sig. (2-tailed)	.004	.047	.006

a. Grouping Variable: Location

**Table 5.28 CAS Human/Wind Participant Perceptions of Risk in Relation to Ability, Attitude and Crowding**

Mann-Whitney U test found that the perceived risk scores of Human CAS participants associated with ability attitude and crowding was significantly higher than Wind participants.

	Powered	N	Mean Rank	Sum of Ranks
Risk ability	Human	43	61.79	2657.00
	Wind	61	45.95	2803.00
	Total	104		
Risk attitude	Human	43	59.88	2575.00
	Wind	61	47.30	2885.00
	Total	104		
Risk crowd	Human	43	59.69	2566.50
	Wind	61	47.43	2893.50
	Total	104		

	Risk ability	Risk attitude	Risk crowd
Mann-Whitney U	912.000	994.000	1002.500
Wilcoxon W	2803.000	2885.000	2893.500
Z	-2.749	-2.198	-2.141
Asymp. Sig. (2-tailed)	.006	.028	.032

**Table 5.29      CAS Fuel/Wind Participant Perceptions of Risk in Relation to Ability, Attitude and Crowding**

The Mann-Whitney U test found that the perceived risk scores of Fuel CAS participants associated with ability attitude and crowding was significantly higher than Wind participants

	Powered	N	Mean Rank	Sum of Ranks
Risk ability	Wind	61	36.73	2240.50
	Fuel	20	54.03	1080.50
	Total	81		
Risk attitude	Wind	61	36.98	2255.50
	Fuel	20	53.28	1065.50
	Total	81		
Risk crowd	Wind	61	36.92	2252.00
	Fuel	20	53.45	1069.00
	Total	81		

	Risk ability	Risk attitude	Risk crowd
Mann-Whitney U	349.500	364.500	361.000
Wilcoxon W	2240.500	2255.500	2252.000
Z	-2.968	-2.820	-2.850
Asymp. Sig. (2-tailed)	.003	.005	.004

a Grouping Variable: Powered

**Table 5.30      CAS Participants in Relation to Incidences of Collision**

There was a significant association between the type of powered CAS and incidents of collision wave powered participants are more likely to be involved in a collision than human wind or fuel, Fuel powered CAS participants were least likely to be involved in a collision.

			Powered				Total
			Human	Wave	Wind	Fuel	
Collide	Yes	Count	16	62	24	4	106
		Expected Count	21.8	43.1	30.9	10.1	106.0
		Residual	-5.8	18.9	-6.9	-6.1	
	No	Count	27	23	37	16	103
		Expected Count	21.2	41.9	30.1	9.9	103.0
		Residual	5.8	-18.9	6.9	6.1	
Total	Count	43	85	61	20	209	
	Expected Count	43.0	85.0	61.0	20.0	209.0	

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	30.642(a)	3	.000
Likelihood Ratio	31.886	3	.000
Linear-by-Linear Association	4.268	1	.039
N of Valid Cases	209		

a 0 cells (.0%) have expected count less than 5. The minimum expected count is 9.86.

**Table 5.31      Incidents of Collision Caused by Participants by Power Source**

There was a significant association between the type of powered CAS and incidents of collision caused by them. Wave powered participants are more likely to have caused a collision than human wind or fuel, Fuel powered CAS participants were least likely to have caused a collision.

			Powered				Total
			Human	Wave	Wind	Fuel	
U-Collide	Yes	Count	12	58	17	0	87
		Expected Count	17.9	35.4	25.4	8.3	87.0
		Residual	-5.9	22.6	-8.4	-8.3	
	No	Count	30	27	44	19	120
		Expected Count	24.7	48.8	35.0	11.5	120.0
		Residual	5.3	-21.8	9.0	7.5	
	Do-Not Know	Count	1	0	0	1	2
		Expected Count	.4	.8	.6	.2	2.0
		Residual	.6	-.8	-.6	.8	
Total	Count	43	85	61	20	209	
	Expected Count	43.0	85.0	61.0	20.0	209.0	

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	51.260(a)	6	.000
Likelihood Ratio	58.110	6	.000
Linear-by-Linear Association	8.733	1	.003
N of Valid Cases	209		

a 4 cells (33.3%) have expected count less than 5. The minimum expected count is .19.

**Table 5.32      Perception of Increased Risk when Sharing Water Space**

Response	Frequency	Percent
Yes	169	80.9
No	36	17.2
Not-Know	4	1.9
Total	209	100.0

**Table 5.33      Male and Female Participant Perceptions of Risk**

			Fe/Male		Total
			Male	Female	
Risk-Share	Yes	Count	137	32	169
		Expected Count	141.5	27.5	169.0
		Residual	-4.5	4.5	
	No	Count	34	2	36
		Expected Count	30.1	5.9	36.0
		Residual	3.9	-3.9	
	Not-Know	Count	4	0	4
		Expected Count	3.3	.7	4.0
		Residual	.7	-.7	
Total	Count		175	34	209
	Expected Count		175.0	34.0	209.0
		Value	df	Asymp. Sig. (2-sided)	
Pearson Chi-Square		4.692(a)	2	.096	
Likelihood Ratio		6.156	2	.046	
Linear-by-Linear Association		4.548	1	.033	
N of Valid Cases		209			

a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is .65.

**Table 5.34      Respondent Perception of Risk in Relation to Sharing Water Space**

There is a significant relationship between the perceived reduction in quality of experience by the CAS participant and their perception of risk when sharing an activity space with others.

**Qualityreduced \* Risk-Share Crosstabulation**

			Risk-Share			Total
			Yes	No	Not-Know	
Qualityreduced	Yes	Count	92	8	0	100
		Expected Count	80.9	17.2	1.9	100.0
		Residual	11.1	-9.2	-1.9	
	No	Count	74	28	4	106
		Expected Count	85.7	18.3	2.0	106.0
		Residual	-11.7	9.7	2.0	
	Not-Know	Count	3	0	0	3
		Expected Count	2.4	.5	.1	3.0
		Residual	.6	-.5	-.1	
Total	Count		169	36	4	209
	Expected Count		169.0	36.0	4.0	209.0

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	17.812 <sup>a</sup>	4	.001
Likelihood Ratio	20.379	4	.000
Linear-by-Linear Association	12.951	1	.000
N of Valid Cases	209		

a. 5 cells (55.6%) have expected count less than 5. The minimum expected count is .06.



**Table 5.35:     Respondent Encounters with Hostility**

Type of Hostility	No	%	Yes	%
Verbal	98	46.9	111	53.1
Gesticular	121	57.9	88	42.1
Physical	188	90.0	21	10.0

**Table 5.36     Respondent Encounters with Verbal Hostility in Relation to Ability**

Result: There is a significant relationship between the self-perceived ability by CAS participants and the occurrence of verbal hostility

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	14.668 <sup>a</sup>	2	.001
Likelihood Ratio	14.845	2	.001
Linear-by-Linear Association	13.801	1	.000
N of Valid Cases	209		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 15.47.

**Table 5.37     Respondent Encounters with Gesticular Hostility in Relation to Ability**

There is a significant relationship between the self-perceived ability by CAS participants and the occurrence of gesticular hostility.

**Crosstab**

			Ability			Total
			Beginner	Intermediate	Experienced	
Gestures	Yes	Count	5	23	60	88
		Expected Count	13.9	26.1	48.0	88.0
		Residual	-8.9	-3.1	12.0	
	No	Count	28	39	54	121
		Expected Count	19.1	35.9	66.0	121.0
		Residual	8.9	3.1	-12.0	
Total		Count	33	62	114	209
		Expected Count	33.0	62.0	114.0	209.0

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	15.655 <sup>a</sup>	2	.000
Likelihood Ratio	16.936	2	.000
Linear-by-Linear Association	15.418	1	.000
N of Valid Cases	209		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 13.89.

**Table 5.38      Respondent Encounters with Physical Hostility in Relation to Ability**

There is a significant relationship between the self-perceived ability by CAS participants and the occurrence of physical hostility.

Crosstab						
			Ability			Total
			Beginner	Intermedi ate	Experienc ed	
Physical	Yes	Count	0	4	17	21
		Expected Count	3.3	6.2	11.5	21.0
		Residual	-3.3	-2.2	5.5	
	No	Count	33	58	97	188
		Expected Count	29.7	55.8	102.5	188.0
		Residual	3.3	2.2	-5.5	
	Total	Count	33	62	114	209
		Expected Count	33.0	62.0	114.0	209.0

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	7.558 <sup>a</sup>	2	.023
Likelihood Ratio	10.631	2	.005
Linear-by-Linear Association	7.479	1	.006
N of Valid Cases	209		

a. 1 cells (16.7%) have expected count less than 5. The minimum expected count is 3.32.

**Table 5.39      Respondent Encounters with Verbal Hostility in Relation to Collision**

There was a significant association between CAS participants who had encountered verbal hostility and those who had been involved in a collision. CASs participants that had encountered verbal hostility are more likely to have been involved in a collision.

			Verbal		Total
			Yes	No	
Collide	Yes	Count	68	38	106
		Expected Count	56.3	49.7	106.0
		Residual	11.7	-11.7	
	No	Count	43	60	103
		Expected Count	54.7	48.3	103.0
		Residual	-11.7	11.7	
Total	Count	111	98	209	
	Expected Count	111.0	98.0	209.0	

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	10.529(b)	1	.001		
Continuity Correction(a)	9.648	1	.002		
Likelihood Ratio	10.617	1	.001		
Fisher's Exact Test				.001	.001
Linear-by-Linear Association	10.478	1	.001		
N of Valid Cases	209				

a Computed only for a 2x2 table

**Table 5.40      Respondent Encounters with Gesticular Hostility in Relation to Collision**

There was a significant association between CAS participants who had encountered gesticular hostility and those who had been involved in a collision. CAS participants that had encountered gesticular hostility are more likely to have been involved in a collision.

			Gestures		Total
			Yes	No	
Collide	Yes	Count	59	47	106
		Expected Count	44.6	61.4	106.0
		Residual	14.4	-14.4	
	No	Count	29	74	103
		Expected Count	43.4	59.6	103.0
		Residual	-14.4	14.4	
Total	Count	88	121	209	
	Expected Count	88.0	121.0	209.0	

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	16.212(b)	1	.000	.000	.000
Continuity Correction(a)	15.104	1	.000		
Likelihood Ratio	16.468	1	.000		
Fisher's Exact Test					
Linear-by-Linear Association	16.135	1	.000		
N of Valid Cases	209				

a Computed only for a 2x2 table

b 0 cells (.0%) have expected count less than 5. The minimum expected count is 43.37.

**Table 5.41      Respondents' Knowledge of Sporting Codes of Practice (SCP)**

Knowledge of SCP	Frequency	Percent %
None-Low	19	9.1
Medium	73	34.9
High	117	56.0
Total	209	100.0

**Table 5.42      Respondent Perception of SCP Availability at Location**

There is a significant relationship between the perceived accessibility of SCP by CAS participants and the location of interview.

Crosstab								
			Location					Total
			Falmouth	Plymouth	Newquay	Penwith-Marazion	Carrick St Agnes	
AccessibleSCP	Yes	Count	26	11	35	8	15	95
		Expected Count	20.0	5.9	36.4	16.8	15.9	95.0
		Residual	6.0	5.1	-1.4	-8.8	-.9	
	No	Count	18	2	45	29	20	114
		Expected Count	24.0	7.1	43.6	20.2	19.1	114.0
		Residual	-6.0	-5.1	1.4	8.8	.9	
Total		Count	44	13	80	37	35	209
		Expected Count	44.0	13.0	80.0	37.0	35.0	209.0

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	20.007 <sup>a</sup>	4	.000
Likelihood Ratio	21.222	4	.000
Linear-by-Linear Association	8.436	1	.004
N of Valid Cases	209		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 5.91.

**Table 5.43      Respondent Perception of SCP Availability and Encounter with Verbal Hostility**

There is a significant relationship between the perceived accessibility of SCP by CAS participants and the occurrence of verbal hostility.

Crosstab					
			Verbal		Total
			Yes	No	
AccessibleSCP	Yes	Count	42	53	95
		Expected Count	50.5	44.5	95.0
		Residual	-8.5	8.5	
	No	Count	69	45	114
		Expected Count	60.5	53.5	114.0
		Residual	8.5	-8.5	
	Total		Count	111	98
			Expected Count	111.0	98.0

Chi-Square Tests					
	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	5.539 <sup>b</sup>	1	.019		
Continuity Correction <sup>a</sup>	4.903	1	.027		
Likelihood Ratio	5.558	1	.018		
Fisher's Exact Test				.026	.013
Linear-by-Linear Association	5.513	1	.019		
N of Valid Cases	209				

a. Computed only for a 2x2 table

b. 0 cells (.0%) have expected count less than 5. The minimum expected count is 44.55.

**Table 5.44      Respondent Perception of SCP Availability and Encounter with Gesticular Hostility**

There is a significant relationship between the perceived accessibility of SCP by CAS participants and participant's occurrence of hostile gestures.

AccessibleSC	Yes	Count	Gesture		Total
		Expected	40.0	55.0	95.0
		Residual	-12.0	12.0	
	No	Count	60	54	114
		Expected	48.0	66.0	114.0
Total		Residual	12.0	-12.0	
		Count	88	121	209
		Expected	88.0	121.0	209.0

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	11.400 <sup>b</sup>	1	.001	.001	.001
Continuity Correction <sup>a</sup>	10.470	1	.001		
Likelihood Ratio	11.577	1	.001		
Fisher's Exact Test					
Linear-by-Linear Association	11.345	1	.001		
N of Valid Cases	209				

a. Computed only for a 2x2 table

b. 0 cells (.0%) have expected count less than 5. The minimum expected count is 40.00.

**Table 5.45      Respondent Affiliation to NGB and Other Organisations**

Response	Frequency	Percent %
Member of NGB		
YES	50	23.9
NO	159	76.1
Member of Other		
YES	77	36.8
NO	132	63.2

**Table 5.46      Respondents' Affiliation with NGB and Other Organisations**

Sport Governing Body	Frequency	Percent %
British Canoe Union	8	3.8
British Sub-Aqua Club	5	2.4
Royal Yacht Association	25	12.0
British Surfing Association	4	1.9
Other Organisations		
Sub-Aqua Association	1	.5
Surfers Against Sewage	13	6.2
Surf Life Saving Association	7	3.3
Global Organisation Bodyboard	1	.5
P.A.D.I.	7	3.3
British Water Sport Federation	1	.5
Local Clubs	12	5.7
NONE OF ABOVE	125	59.8

**Table 5.47      Respondent NGB Membership in Relation to Interview Location**

There is a significant relationship between NGB membership and the location of the CAS participant interview.

Crosstab								
			Location					Total
			Falmouth	Plymouth	Newquay	Penwith-Marazion	Carrick St Agnes	
SportBody	Yes	Count	14	5	11	14	6	50
		Expected Count	10.5	3.1	19.1	8.9	8.4	50.0
		Residual	3.5	1.9	-8.1	5.1	-2.4	
	No	Count	30	8	69	23	29	159
		Expected Count	33.5	9.9	60.9	28.1	26.6	159.0
		Residual	-3.5	-1.9	8.1	-5.1	2.4	
	Total	Count	44	13	80	37	35	209
		Expected Count	44.0	13.0	80.0	37.0	35.0	209.0

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	12.386 <sup>a</sup>	4	.015
Likelihood Ratio	12.400	4	.015
Linear-by-Linear Association	1.064	1	.302
N of Valid Cases	209		

a. 1 cells (10.0%) have expected count less than 5. The minimum expected count is 3.11.

**Table 5.48      Craft Power Type in Relation to Interview Location**

There is a significant relationship between the participants of some individual powered CAS and some of the interview locations.

Powered * Location Crosstabulation								
				Location				
				Falmouth	Plymouth	Newquay	Penwith-Marazion	Carrick St Agnes
Powered	Human	Count		8	3	18	0	14
		Expected Count		9.1	2.7	16.5	7.6	7.2
	Wave	Count		3	0	59	3	20
		Expected Count		17.9	5.3	32.5	15.0	14.2
	Wind	Count		18	8	2	33	0
		Expected Count		12.8	3.8	23.3	10.8	10.2
	Fuel	Count		15	2	1	1	1
		Expected Count		4.2	1.2	7.7	3.5	3.3
	Total	Count		44	13	80	37	35
		Expected Count		44.0	13.0	80.0	37.0	35.0

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	185.005 <sup>a</sup>	12	.000
Likelihood Ratio	202.974	12	.000
Linear-by-Linear Association	21.491	1	.000
N of Valid Cases	209		

a. 6 cells (30.0%) have expected count less than 5. The minimum expected count is 1.24.

**Table 5.49      Respondent NGB Membership in Relation to Craft Power Type**

.There is a relationship between NGB membership and the CAS participant craft power source.

Crosstab							
			Powered				Total
			Human	Wave	Wind	Fuel	
SportBody	Yes	Count	10	14	24	2	50
		Expected Count	10.3	20.3	14.6	4.8	50.0
		Residual	-.3	-6.3	9.4	-2.8	
	No	Count	33	71	37	18	159
		Expected Count	32.7	64.7	46.4	15.2	159.0
		Residual	.3	6.3	-9.4	2.8	
Total		Count	43	85	61	20	209
		Expected Count	43.0	85.0	61.0	20.0	209.0

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	12.705 <sup>a</sup>	3	.005
Likelihood Ratio	12.508	3	.006
Linear-by-Linear Association	.554	1	.457
N of Valid Cases	209		

a. 1 cells (12.5%) have expected count less than 5. The minimum expected count is 4.78.

**Table 5.50      Respondent NGB Membership in Relation to Ability**

There is a relationship between NGB membership and the ability of CAS participant

Crosstab						
			Ability			Total
			Beginner	Intermediate	Experienced	
SportBody	Yes	Count	2	11	37	50
		Expected Count	7.9	14.8	27.3	50.0
		Residual	-5.9	-3.8	9.7	
	No	Count	31	51	77	159
		Expected Count	25.1	47.2	86.7	159.0
		Residual	5.9	3.8	-9.7	
	Total	Count	33	62	114	209
		Expected Count	33.0	62.0	114.0	209.0

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	11.648 <sup>a</sup>	2	.003
Likelihood Ratio	13.228	2	.001
Linear-by-Linear Association	11.543	1	.001
N of Valid Cases	209		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 7.89.

**Table 5.51      Respondent NGB Membership in Relation to Age Group**

There was close association between the age range of CAS participants and membership of NGB. Those who were 16-25 or 36-46 were more likely to be a member of a NGB, those aged between 26-35 were least likely to be members of a NGB.

			Member		Total
			Yes	No	
Age 16-25	Count		18	28	46
	Expected Count		16.9	29.1	46.0
	Residual		1.1	-1.1	
26-35	Count		19	50	69
	Expected Count		25.4	43.6	69.0
	Residual		-6.4	6.4	
36-45	Count		21	38	59
	Expected Count		21.7	37.3	59.0
	Residual		-.7	.7	
46	Count		19	16	35
	Expected Count		12.9	22.1	35.0
	Residual		6.1	-6.1	
Total	Count		77	132	209
	Expected Count		77.0	132.0	209.0

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	7.288(a)	3	.063
Likelihood Ratio	7.210	3	.065
Linear-by-Linear Association	2.191	1	.139
N of Valid Cases	209		

a 0 cells (.0%) have expected count less than 5. The minimum expected count is 12.89.

**Table 5.52      Respondent NGB Membership in Relation to CAS Experience**

There is a significant relationship between CAS participants' self-perceived ability and sport organisation membership.

**Crosstab**

			Ability			Total
			Beginner	Intermediate	Experienced	
Member	Yes	Count	5	18	54	77
		Expected Count	12.2	22.8	42.0	77.0
		Residual	-7.2	-4.8	12.0	
	No	Count	28	44	60	132
		Expected Count	20.8	39.2	72.0	132.0
		Residual	7.2	4.8	-12.0	
Total		Count	33	62	114	209
		Expected Count	33.0	62.0	114.0	209.0



**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	13.726 <sup>a</sup>	2	.001
Likelihood Ratio	14.594	2	.001
Linear-by-Linear Association	13.579	1	.000
N of Valid Cases	209		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 12.16.

**Table 5.53 Respondent NGB Membership in Relation to Perception of Quality**

There is a significant relationship between NGB membership and CAS participant perception of a reduction of the 'quality of experience' when interacting with others in the sporting environment.

**Crosstab**

			Qualityreduced			Total
			Yes	No	Not-Know	
SportBody	Yes	Count	18	30	2	50
		Expected Count	23.9	25.4	.7	50.0
		Residual	-5.9	4.6	1.3	
	No	Count	82	76	1	159
		Expected Count	76.1	80.6	2.3	159.0
		Residual	5.9	-4.6	-1.3	
Total	Count	100	106	3	209	
	Expected Count	100.0	108.0	3.0	209.0	

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.056 <sup>a</sup>	2	.048
Likelihood Ratio	5.578	2	.061
Linear-by-Linear Association	4.897	1	.027
N of Valid Cases	209		

a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is .72.

**Table 5.54: Respondents' Perceptions of Accessibility and Effectiveness of SCP**

Response	Frequency	Percent (%)
<b>Accessibility of SCP</b>		
Yes	95	45.5
No	114	54.5
<b>Effectiveness of SCP</b>		
Yes	127	60.8
No	81	38.9

**Table 5.55     Respondents Perceptions to the Accessibility of SCP in Relation to Craft Type**

			Accessible SCP		Total
			Yes	No	
Powered	Human	Count	27	16	43
		Expected Count	19.5	23.5	43.0
		Residual	7.5	-7.5	
	Wave	Count	29	56	85
		Expected Count	38.6	46.4	85.0
		Residual	-9.6	9.6	
	Wind	Count	25	36	61
		Expected Count	27.7	33.3	61.0
		Residual	-2.7	2.7	
	Fuel	Count	14	6	20
		Expected Count	9.1	10.9	20.0
		Residual	4.9	-4.9	
Total	Count	95	114	209	
	Expected Count	95.0	114.0	209.0	

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	14.970(a)	3	.002
Likelihood Ratio	15.128	3	.002
Linear-by-Linear Association	.003	1	.955
N of Valid Cases	209		

a 0 cells (.0%) have expected count less than 5. The minimum expected count is 9.09.

**Table 5.56     Respondents Perceptions to the Accessibility of SCP in Relation to Location**

			Accessible SCP		Total
			Yes	No	
Location	Falmouth	Count	26	18	44
		Expected Count	20.0	24.0	44.0
		Residual	6.0	-6.0	
	Plymouth	Count	11	2	13
		Expected Count	5.9	7.1	13.0
		Residual	5.1	-5.1	
	Newquay	Count	35	45	80
		Expected Count	36.4	43.6	80.0
		Residual	-1.4	1.4	
	Penwith-Marazion	Count	8	29	37
		Expected Count	16.8	20.2	37.0
		Residual	-8.8	8.8	
	Carrick St Agnes	Count	15	20	35
		Expected Count	15.9	19.1	35.0
		Residual	-.9	.9	
Total	Count	95	114	209	
	Expected Count	95.0	114.0	209.0	

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	20.007(a)	4	.000
Likelihood Ratio	21.222	4	.000
Linear-by-Linear Association	8.436	1	.004
N of Valid Cases	209		

a 0 cells (.0%) have expected count less than 5. The minimum expected count is 5.91.

**Table 5.57 Respondents Perceptions to the Effectiveness of SCP in Relation to Location**

			Effective SCP		Total
			Yes	No	
Location	Falmouth	Count	35	9	44
		Expected Count	26.9	17.1	44.0
		Residual	8.1	-8.1	
	Plymouth	Count	9	4	13
		Expected Count	8.0	5.0	13.0
		Residual	1.0	-1.0	
	Newquay	Count	45	35	80
		Expected Count	49.0	31.0	80.0
		Residual	-4.0	4.0	
	Marazion	Count	21	16	37
		Expected Count	22.7	14.3	37.0
		Residual	-1.7	1.7	
	Carrick St Agnes	Count	18	17	35
		Expected Count	21.4	13.6	35.0
		Residual	-3.4	3.4	
Total		Count	128	81	209
		Expected Count	128.0	81.0	209.0

#### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	9.133(a)	4	.058
Likelihood Ratio	9.685	4	.046
Linear-by-Linear Association	7.555	1	.006
N of Valid Cases	209		

a 0 cells (.0%) have expected count less than 5. The minimum expected count is 5.04.

**Table 5.58 Respondents' Awareness and Perception of the Effectiveness of CAS Management Structures**

There is a significant relationship between CAS participant awareness of government policies and management structures that regulate the coastal environment and their perceived level of ability.

Crosstab							
			Ability			Total	
			Beginner	Intermediate	Experienced		
AwareGov	Yes	Count	7	26	65	98	
		Expected Count	15.5	29.1	53.5	98.0	
		Residual	-8.5	-3.1	11.5		
	No	Count	26	36	49	111	
		Expected Count	17.5	32.9	60.5	111.0	
		Residual	8.5	3.1	-11.5		
	Total		Count	33	62	114	209
			Expected Count	33.0	62.0	114.0	209.0

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	14.044 <sup>a</sup>	2	.001
Likelihood Ratio	14.706	2	.001
Linear-by-Linear Association	13.854	1	.000
N of Valid Cases	209		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 15.47.

**Table 5.59: Respondent Identification of the Regulation and Control Mechanisms at Location**

Response	Frequency	Percent %
None	35	16.7
Harbour Authorities	35	16.7
Coast Guard	4	1.9
Life Guards	119	56.9
MOD Police	4	1.9
Zoning	12	5.7

**Table 5.60      Respondent Awareness of Management Mechanisms in Relation to Ability**

Response	Frequency	Percent (%)
Aware of Policies and or Guideline		
Yes	98	46.9
No	111	53.1
Policies and Guidelines Currently Effective		
Yes	72	34.4
No	112	53.6
Not-Know	25	12.0

**Table 5.61      Respondent Awareness of Management Mechanisms in Relation to Craft Power Type**

There is a relationship between CAS participants' awareness of government policies and management structures that regulate the coastal environment and the individual type of power source that drive their craft.

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	7.678 <sup>a</sup>	3	.053
Likelihood Ratio	7.754	3	.051
Linear-by-Linear Association	2.778	1	.096
N of Valid Cases	209		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 9.38.

**Table 5.62      Respondent Awareness of Management Mechanisms in Relation to Age Group**

There is a strong relationship between CAS participant age group and awareness of government policies and management structures that regulate the coastal environment.

**Crosstab**

			Age				Total
			16-25	26-35	36-45	46	
AwareGov	Yes	Count	12	35	30	21	93
		Expected Count	21.6	32.4	27.7	16.4	98.0
		Residual	-9.6	2.6	2.3	4.6	
	No	Count	34	34	29	14	111
		Expected Count	24.4	36.6	31.3	18.6	111.0
		Residual	9.6	-2.6	-2.3	-4.6	
Total	Count		46	69	59	35	209
	Expected Count		46.0	69.0	59.0	35.0	209.0

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	11.188 <sup>a</sup>	3	.011
Likelihood Ratio	11.597	3	.009
Linear-by-Linear Association	8.376	1	.004
N of Valid Cases	209		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 16.41.

**Table 5.63      Respondent Awareness of Management Mechanisms in Relation to Visitor Status**

There is a significant relationship between CAS participant visitor/resident status and awareness of government policies and management structures that regulate the coastal environment

Crosstab

			VisitorResident		Total
			Visitor	Resident	
AwareGov	Yes	Count	46	52	98
		Expected Count	58.1	39.9	98.0
		Residual	-12.1	12.1	
	No	Count	78	33	111
		Expected Count	65.9	45.1	111.0
		Residual	12.1	-12.1	
Total	Count		124	85	209
	Expected Count		124.0	85.0	209.0

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	11.742 <sup>b</sup>	1	.001	.001	.000
Continuity Correction	10.795	1	.001		
Likelihood Ratio	11.826	1	.001		
Fisher's Exact Test					
Linear-by-Linear Association	11.686	1	.001		
N of Valid Cases	209				

- a. Computed only for a 2x2 table
- b. 0 cells (.0%) have expected count less than 5. The minimum expected count is 39.86.

**Table 6.1      The Average Desirable Number of Beginner, Intermediate and Experienced Swimmers that are Acceptable by CAS Human or Wind Powered Participants**

(F = 37.768 / 36.398 / 50.465), a *t*-test for unequal variances was used. The difference in the average desirable number of beginner, intermediate and experienced swimmers acceptable are significantly higher by CAS human powered participants.

Group Statistics					
	Powered	N	Mean	Std. Deviation	Std. Error Mean
SwimBegin	Human	43	2.9070	5.1307	.7824
	Wind	61	.4918	1.6894	.2163
SwimIntermediate	Human	43	4.5349	5.7211	.8725
	Wind	61	1.1639	3.2103	.4110
SwimExperienced	Human	43	6.6744	7.9723	1.2158
	Wind	61	1.2459	3.2076	.4107

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
SwimBegin	Equal variances assumed	37.768	.000	3.428	102	.001	2.4152	.7045	1.0178	3.8126
	Equal variances not assumed			2.975	48.467	.005	2.4152	.8116	.7834	4.0470
SwimIntermediate	Equal variances assumed	26.398	.000	3.830	102	.000	3.3709	.8802	1.6251	5.1168
	Equal variances not assumed			3.495	60.623	.001	3.3709	.9644	1.4422	5.2697
SwimExperienced	Equal variances assumed	50.465	.000	4.803	102	.000	5.4285	1.1303	3.1865	7.6705
	Equal variances not assumed			4.230	51.661	.000	5.4285	1.2833	2.8531	8.0040

**Table 6.2      The Average Desirable Number of Beginner, Intermediate and Experienced Swimmers Acceptable by CAS Human or Fuel Powered Participants**

Result: (F = 14.10 / 24.515 / 29.472), a *t*-test for unequal variances was used. The difference in the average desirable number of beginner, intermediate and experienced swimmers acceptable to CAS human powered participants as compared to powered participants

Group Statistics					
	Powered	N	Mean	Std. Deviation	Std. Error Mean
SwimBegin	Human	43	2.9070	5.1307	.7824
	Fuel	20	.5000	1.5728	.3517
SwimIntermediate	Human	43	4.5349	5.7211	.8725
	Fuel	20	.6500	1.8432	.4122
SwimExperienced	Human	43	6.6744	7.9723	1.2158
	Fuel	20	.8000	2.1667	.4845

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
SwimBegin	Equal variances assumed	14.100	.000	2.046	61	.045	2.4070	1.1765	5.437E-02	4.7596
	Equal variances not assumed			2.806	55.663	.007	2.4070	.8578	.6883	4.1257
SwimIntermediate	Equal variances assumed	24.515	.000	2.955	61	.004	3.8849	1.3147	1.2560	6.5138
	Equal variances not assumed			4.026	56.606	.000	3.8849	.9649	1.9524	5.8174
SwimExperienced	Equal variances assumed	29.472	.000	3.227	61	.002	5.8744	1.8201	2.2348	9.5140
	Equal variances not assumed			4.489	53.421	.000	5.8744	1.3088	3.2499	8.4990

**Table 6.3**      **Total Mean Tolerance Levels for CAS Swim Participants**

Swimmer	Human	Wave	Wind	Fuel
Beginner	2.9070	1.1294	.4918	.5000
Intermediate	4.5349	2.8000	1.1639	.6500
Experienced	6.6744	5.3294	1.2459	.8000

**Table 6.4**      **The Average Desirable Number of Beginner, Intermediate and Experienced Bodyboard Participants Acceptable by CAS Human or Wind Powered Participants**

There is significant difference in the average desirable number of beginner, intermediate and experienced bodyboard participants acceptable by CAS human or wind-powered participants. (F = 16.210 / 15.092 / 27.184), where a t-test for unequal variances was used.

Group Statistics					
	Powered	N	Mean	Std. Deviation	Std. Error Mean
BodyboardBegin	Human	43	1.2558	2.3206	.3539
	Wind	61	.4426	1.4321	.1834
BodyIntermediate	Human	43	1.7209	2.7544	.4200
	Wind	61	.6885	1.6587	.2124
BodyExperienced	Human	43	3.3721	4.5199	.6893
	Wind	61	1.3934	2.3042	.2950

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
BodyboardBegin	Equal variances assumed	16.210	.000	2.207	102	.030	.8132	.3684	8.238E-02	1.5440
	Equal variances not assumed			2.040	64.331	.045	.8132	.3986	1.703E-02	1.6094
Bodyintermediate	Equal variances assumed	15.092	.000	2.381	102	.019	1.0324	.4336	.1723	1.8925
	Equal variances not assumed			2.193	63.321	.032	1.0324	.4707	9.191E-02	1.9729
BodyExperienced	Equal variances assumed	27.184	.000	2.926	102	.004	1.9787	.6763	.6372	3.3201
	Equal variances not assumed			2.639	57.448	.011	1.9787	.7498	.4775	3.4798



**Table 6.5      The Average Desirable Number of Beginner, Intermediate and Experienced Bodyboard Participants Acceptable by CAS Human or Fuel-powered Participants**

( $F = 24.776 / 25.034 / 17.270$ ), a *t*-test for unequal variances was used. The average desirable number of beginner, intermediate and experienced bodyboard participants is significantly higher for CAS human powered participants than for CAS fuel powered participants.

Group Statistics					
	Powered	N	Mean	Std. Deviation	Std. Error Mean
BodyboardBegin	Human	43	1.2558	2.3206	.3539
	Fuel	20	.1000	.4472	1.000E-01
BodyIntermediate	Human	43	1.7209	2.7544	.4200
	Fuel	20	.2000	.5231	.1170
BodyExperienced	Human	43	3.3721	4.5199	.6893
	Fuel	20	1.1000	1.7442	.3900

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
BodyboardBegin	Equal variances assumed	24.776	.000	2.199	61	.032	1.1558	.5255	.1049	2.2067
	Equal variances not assumed			3.143	48.294	.003	1.1558	.3678	.4165	1.8951
BodyIntermediate	Equal variances assumed	25.034	.000	2.439	61	.018	1.5209	.6236	.2739	2.7680
	Equal variances not assumed			3.488	48.128	.001	1.5209	.4360	.6443	2.3976
BodyExperienced	Equal variances assumed	17.270	.000	2.166	61	.034	2.2721	1.0487	.1750	4.3692
	Equal variances not assumed			2.869	59.676	.006	2.2721	.7920	.6877	3.8564

**Table 6.6      The Average Desirable Number of Beginner, Intermediate and Experienced Bodyboard Participants Acceptable by CAS Wave or Wind Powered Participants**

( $F = 8.598 / 7.202 / 13.166$ ), a *t*-test for unequal variances was used. The average desirable number of beginner, intermediate and experienced bodyboard participants is higher for CAS wave powered participants than for wind-powered participants.

Group Statistics					
	Powered	N	Mean	Std. Deviation	Std. Error Mean
BodyboardBegin	Wave	85	1.9882	6.0267	.6537
	Wind	61	.4426	1.4321	.1834
BodyIntermediate	Wave	85	3.9882	11.4585	1.2429
	Wind	61	.6885	1.6587	.2124
BodyExperienced	Wave	85	5.6118	9.5457	1.0354
	Wind	61	1.3934	2.3042	.2950

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
BodyboardBegin	Equal variances assumed	8.598	.004	1.962	144	.052	1.5456	.7878	-1.16E-02	3.1028
	Equal variances not assumed			2.277	98.898	.025	1.5456	.6789	.1981	2.8931
BodyIntermediate	Equal variances assumed	7.202	.008	2.230	144	.027	3.2997	1.4795	.3754	6.2241
	Equal variances not assumed			2.617	88.871	.010	3.2997	1.2609	.7943	5.8051
BodyExperienced	Equal variances assumed	13.166	.000	3.378	144	.001	4.2183	1.2486	1.7504	6.6863
	Equal variances not assumed			3.918	97.296	.000	4.2183	1.0766	2.0817	6.3550

**Table 6.7      The Difference in the Average Desirable Number of Beginner and Experienced Bodyboard Participants Acceptable by CAS Wave Powered Participants**

( $F = 4.707 / 5.295$ ), a  $t$ -test for unequal variances was used. The difference in the average desirable number of beginner and experienced bodyboard participants acceptable is significantly higher by CAS wave powered participants than for fuel-powered participants.

Group Statistics

	Powered	N	Mean	Std. Deviation	Std. Error Mean
BodyboardBegin	Wave	85	1.9882	6.0267	.6537
	Fuel	20	.1000	.4472	1.000E-01
BodyIntermediate	Wave	85	3.9882	11.4585	1.2429
	Fuel	20	.2000	.5231	.1170
BodyExperienced	Wave	85	5.6118	9.5457	1.0354
	Fuel	20	1.1000	1.7442	.3900

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
BodyboardBegin	Equal variances assumed	4.787	.031	1.395	103	.166	1.8882	1.3534	-.7960	4.5725
	Equal variances not assumed			2.855	87.765	.005	1.8882	.6813	.5740	3.2025
BodyExperience	Equal variances assumed	5.295	.023	2.098	103	.038	4.5118	2.1505	.2468	8.7767
	Equal variances not assumed			4.078	100.576	.000	4.5118	1.1064	2.3169	6.7067

**Table 6.8      The Difference in the Average Desirable Number of Intermediate Bodyboard Participants Acceptable by CAS Wind Powered Participants**

( $F = 7.484$ ) ( $t$  test. 2.015 Result: 2. Tailed = 0.047) The average desirable number of intermediate swimmers is significantly higher for CAS wind powered participants than fuel powered participants.

Independent Samples Test									
		Levene's Test for Equality of Variances		t-test for Equality of Means					
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference Lower      Upper
BodyIntermediate	Equal variances assumed	7.484	.008	1.291	79	.200	.4885	.3783	-.2645      1.2415
	Equal variances not assumed			2.015	78.974	.047	.4885	.2425	.911E-03      .9711

**Table 6.9      Total Mean Tolerance Levels for CAS Bodyboard Participants**

Bodyboard	Human	Wave	Wind	Fuel
Beginner	1.2558	1.9882	.4426	.1000
Intermediate	1.7209	3.9882	.6885	.2000
Experienced	3.3721	5.6118	1.3934	1.1000

**Table 6.10      The Average Desirable Number of Beginner, Intermediate and Experienced Shortboard CAS Participants Acceptable to CAS Human or Wave Powered Participants**

( $F = 16.210 / 15.092 / 27.184$ )  $t$ -test for unequal variances was used. The average desirable numbers of beginner, intermediate and experienced short board CAS participants acceptable are significantly higher for CAS wave powered participants than human powered participants.

Short Beginner	Human			Std.	Std. Error
	Wave	N 85	Mean 2.1294	Deviation 1.9808	Mean 2.148
ShortIntermediate	Human	43	.9535	2.1152	.3226
	Wave	85	2.7882	3.7324	.4048
ShortExperience	Human	43	2.1163	3.3037	.5038
	Wave	85	4.5882	5.6089	.6084

Independent Samples Test									
		Levene's Test for Equality of Variances		t-test for Equality of Means					
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference Lower      Upper
Short Beginner	Equal variances assumed	12.812	.000	-2.062	126	.041	-.6876	.3335	-1.3476      -2.76E-02
	Equal variances not assumed			-2.355	117.694	.020	-.6876	.2920	-1.2658      -.1093
ShortIntermediate	Equal variances assumed	5.947	.016	-2.986	126	.003	-1.8347	.6144	-3.0506      -.6189
	Equal variances not assumed			-3.545	124.309	.001	-1.8347	.5176	-2.8593      -.8102
ShortExperienced	Equal variances assumed	2.284	.133	-2.663	126	.009	-2.4720	.9284	-4.3092      -.6347
	Equal variances not assumed			-3.129	123.011	.002	-2.4720	.7899	-4.0355      -.9084

**Table 6.11 The Average Desirable Number of Beginner, Intermediate and Experienced Shortboard CAS Participants Acceptable by CAS Human or Fuel Powered Participants**

(F = 10.649), a *t*-test for unequal variances was used. The average desirable number of intermediate shortboard CAS participants acceptable is significantly higher for CAS wave powered participants than for fuel-powered participants.

**Group Statistics**

	Powered	N	Mean	Std. Deviation	Std. Error Mean
Short Beginner	Human	43	.4419	1.2966	.1977
	Fuel	20	.1000	.4472	1.000E-01
ShortIntermediate	Human	43	.9535	2.1152	.3226
	Fuel	20	.2000	.5231	.1170
ShortExperienced	Human	43	2.1163	3.3037	.5038
	Fuel	20	2.2500	5.6090	1.2542

**Independent Samples Test**

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
ShortIntermediate	Equal variances assumed	10.649	.002	1.565	61	.123	.7535	.4816	-.2095	1.7164
	Equal variances not assumed			2.196	51.794	.033	.7535	.3431	.491E-02	1.4421

**Table 6.12 The Average Desirable Number of Beginner, Intermediate and Experienced Shortboard CAS Participants Acceptable to CAS Wave and Wind Powered Participants**

(F = 37.412 / 26.636 / 10.146), a *t*-test for unequal variances was used. The average desirable number of beginner, intermediate and experienced shortboard CAS participants is significantly higher for CAS wave powered participants than for wind -powered participants.

**Group Statistics**

	Powered	N	Mean	Std. Deviation	Std. Error Mean
Short Beginner	Wave	85	1.1294	1.9808	.2148
	Wind	61	.2623	.8926	.1143
ShortIntermediate	Wave	85	2.7882	3.7324	.4048
	Wind	61	.4426	1.0882	.1393
ShortExperienced	Wave	85	4.5882	5.6089	.6084
	Wind	61	1.3770	2.0426	.2615

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Short Beginner	Equal variances assumed	37.412	.000	3.192	144	.002	.8671	.2717	.3302	1.4041
	Equal variances not assumed			3.563	124.326	.001	.8671	.2434	.3855	1.3488
ShortIntermediate	Equal variances assumed	26.636	.000	4.761	144	.000	2.3456	.4927	1.3718	3.3194
	Equal variances not assumed			5.479	103.053	.000	2.3456	.4281	1.4965	3.1947
ShortExperienced	Equal variances assumed	10.146	.002	4.269	144	.000	3.2112	.7521	1.7246	4.6978
	Equal variances not assumed			4.849	112.534	.000	3.2112	.6622	1.8992	4.5232

Table 6.13 Total Mean Tolerance Levels for CAS Shortboard Participants

Shortboard	Human	Wave	Wind	Fuel
Beginner	.4419	1.1294	.2623	.1000
Intermediate	.9535	2.7882	.4426	.2000
Experienced	2.2500	4.5882	1.3770	2.2542

Table 6.14 The Average Desirable Number of Beginner, Intermediate and Experienced Longboard CAS Participants Acceptable to CAS Human and Wave Powered Participants

( $F = 5.807 / 4.394 / 6.378$ ), a  $t$ -test for unequal variances was used. The average desirable number of beginner, intermediate and experienced longboard CAS participants is significantly higher for CAS wave powered participants than for human powered participants.

Group Statistics

	Powered	N	Mean	Std. Deviation	Std. Error Mean
LongBeginner	Human	43	.3721	1.0471	.1597
	Wave	85	1.1059	2.6233	.2845
LongIntermediate	Human	43	.7209	1.8300	.2791
	Wave	85	2.2353	4.2248	.4582
LongExperience	Human	43	1.2326	2.4673	.3763
	Wave	85	4.0471	6.2942	.6827

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
LongBeginner	Equal variances assumed	5.807	.017	-1.762	126	.081	-.7338	.4165	-1.5580	9.043E-02
	Equal variances not assumed			-2.249	121.198	.026	-.7338	.3263	-1.3797	-8.79E-02
LongIntermediate	Equal variances assumed	4.394	.038	-2.243	126	.027	-1.5144	.6751	-2.8504	-.1783
	Equal variances not assumed			-2.823	123.804	.006	-1.5144	.5365	-2.5763	-.4524
LongExperience	Equal variances assumed	6.378	.013	-2.820	126	.008	-2.8145	.9980	-4.7895	-.8395
	Equal variances not assumed			-3.611	120.537	.000	-2.8145	.7795	-4.3578	-1.2712

**Table 6.15 The Average Desirable Number of Beginner, Intermediate and Experienced Longboard CAS Participants for CAS Wave Powered and Wind Powered Participants**

( $F = 5.565 / 8.519 / 10.640$ ), a *t*-test for unequal variances was used. The Average Desirable Number of Beginner, Intermediate and Experienced Longboard CAS Participants are Significantly Higher for CAS Wave Powered Participants than for Wind Powered Participants.

Group Statistics

	Powered	N	Mean	Std. Deviation	Std. Error Mean
LongBeginner	Wave	85	1.1059	2.6233	.2845
	Wind	61	.4262	1.5325	.1962
LongIntermediate	Wave	85	2.2353	4.2248	.4582
	Wind	61	.5902	1.6368	.2096
LongExperience	Wave	85	4.0471	6.2942	.6827
	Wind	61	1.2787	2.2070	.2826

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
LongBeginner	Equal variances assumed	5.565	.020	1.813	144	.072	.6797	.3750	-6.15E-02	1.4208
	Equal variances not assumed			1.966	138.910	.051	.6797	.3456	-3.73E-03	1.3630
LongIntermediate	Equal variances assumed	8.519	.004	2.887	144	.004	1.6451	.5697	.5190	2.7713
	Equal variances not assumed			3.265	115.727	.001	1.6451	.5039	.6471	2.6432
LongExperience	Equal variances assumed	10.640	.001	3.290	144	.001	2.7684	.8414	1.1054	4.4314
	Equal variances not assumed			3.747	110.700	.000	2.7684	.7389	1.3042	4.2325

**Table 6.16      Total Mean Tolerance Levels for CAS Longboard Participants**

<i>Longboard</i>	<i>Human</i>	<i>Wave</i>	<i>Wind</i>	<i>Fuel</i>
Beginner	.3721	1.1059	1.5325	0000
Intermediate	.7209	2.2353	1.6368	.1500
Experienced	1.2326	4.0471	2.2070	1.9000

**Table 6.17      The Average Desirable Number of Beginner, Intermediate and Experienced Windsurf CAS Participants Acceptable by CAS Human and Wind Powered Participants**

(F = 12.935/ 15.475 / 16.911), a *t*-test for unequal variances was used. The average desirable number of beginner, intermediate and experienced windsurf CAS participants is significantly higher for CAS wind powered participants than for human powered participants.

**Group Statistics**

		Powered	N	Mean	Std. Deviation	Std. Error Mean
WindBeginner	Human		43	.2093	.8326	.1270
	Wind		61	.9180	1.7635	.2258
WindIntermediate	Human		43	.3488	.9731	.1484
	Wind		61	2.0820	2.0920	.2679
WindExperienced	Human		43	.7907	1.4566	.2221
	Wind		61	3.1475	3.0651	.3924

**Independent Samples Test**

		Levene's Test for equality of Variance		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
WindBeginne	Equal varian assumed	12.935	.000	-2.448	102	.016	-.7087	.2896	-1.2831	-.1344
	Equal varian not assumed			-2.736	90.954	.007	-.7087	.2590	-1.2233	-.1942
WindIntermec	Equal varian assumed	15.475	.000	-5.055	102	.000	-1.7331	.3428	-2.4131	-1.0531
	Equal varian not assumed			-5.660	90.326	.000	-1.7331	.3062	-2.3414	-1.1248
WindExperier	Equal varian assumed	16.911	.000	-4.679	102	.000	-2.3568	.5037	-3.3560	-1.3577
	Equal varian not assumed			-5.226	91.229	.000	-2.3568	.4509	-3.2526	-1.4611

**Table 6.18    The Difference in the Average Desirable Number of Beginner, Intermediate and Experienced Windsurf CAS Participants Acceptable by CAS Wind and Wave Powered Participants**

(F = 49.962/ 37.069 / 57.635), a *t*-test for unequal variances was used. The average desirable number of beginner, intermediate and experienced windsurf CAS participants is significantly higher for CAS wind powered participants than for wave powered participants.

Group Statistics					
	Powered	N	Mean	Std. Deviation	Std. Error Mean
WindBeginner	Wave	85	7.059E-02	.3376	3.662E-02
	Wind	61	.9180	1.7635	.2258
WindIntermediate	Wave	85	.2824	.7809	8.470E-02
	Wind	61	2.0820	2.0920	.2679
WindExperienced	Wave	85	.4471	.9821	.1065
	Wind	61	3.1475	3.0651	.3924

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
WindBeginner	Equal variances assumed	49.962	.000	-4.327	144	.000	-.8474	.1959	-1.2346	-.4603
	Equal variances not assumed			-3.705	63.167	.000	-.8474	.2287	-1.3045	-.3904
WindIntermediate	Equal variances assumed	37.069	.000	-7.265	144	.000	-1.7996	.2477	-2.2892	-1.3100
	Equal variances not assumed			-6.406	72.084	.000	-1.7996	.2809	-2.3596	-1.2396
WindExperienced	Equal variances assumed	57.635	.000	-7.606	144	.000	-2.7005	.3551	-3.4023	-1.9987
	Equal variances not assumed			-6.641	68.899	.000	-2.7005	.4066	-3.5117	-1.8692

**Table 6.19    The Average Desirable Number of Beginner, Intermediate and Experienced Windsurf CAS Participants for CAS Wind Powered Participants and Fuel Powered Participants**

F = 15.991 / 5.423), a *t* test for unequal variances was used. The average desirable number of beginner, intermediate and experienced windsurf CAS participants is significantly higher for CAS wind powered participants than for fuel powered participants.

Group Statistics					
	Powered	N	Mean	Std. Deviation	Std. Error Mean
WindBeginner	Wind	61	.9180	1.7635	.2258
	Fuel	20	.0000	.0000	.0000
WindIntermediate	Wind	61	2.0820	2.0920	.2679
	Fuel	20	.4500	1.3563	.3033
WindExperienced	Wind	61	3.1475	3.0651	.3924
	Fuel	20	1.9500	2.6052	.5825



Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
WindBeginner	Equal variances assumed	15.991	.000	2.318	79	.023	.9180	.3960	.1298	1.7062
	Equal variances not assumed			4.068	60.000	.000	.9180	.2258	.4684	1.3697
WindIntermediate	Equal variances assumed	5.423	.022	3.284	79	.002	1.6320	.5001	.6368	2.6273
	Equal variances not assumed			4.033	50.478	.000	1.6320	.4046	.8194	2.4445

**Table 6.20     Total Mean Tolerance Levels for CAS Windsurfboard Participants**

<i>Windsurf</i>	<b>Human</b>	<b>Wave</b>	<b>Wind</b>	<b>Fuel</b>
Beginner	.2093	0000	.9180	0000
Intermediate	.3488	.2824	2.0820	.4500
Experienced	.7907	.4471	3.1475	1.9500

**Table 6.21     The Average Desirable Number of Beginner, Intermediate and Experienced Sailing CAS Participants Acceptable by CAS Human and Wind Powered Participants**

(F = 13.544 / 19.812 / 19.138), a *t*-test for unequal variances was used. The average desirable number of beginner, intermediate and experienced sailing CAS participants is significantly higher for CAS wind powered participants than for human powered participants.

**Group Statistics**

	Powered	N	Mean	Std. Deviation	Std. Error Mean
SailBeginner	Human	43	6.977E-02	.3377	5.150E-02
	Wind	61	.5574	1.5332	.1963
SailIntermediate	Human	43	.1628	.5314	8.104E-02
	Wind	61	1.0164	1.7077	.2187
SailExperienced	Human	43	.2791	.6664	.1016
	Wind	61	1.4754	2.3917	.3062

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
SailBeginner	Equal variances assumed	13.544	.000	-2.048	102	.043	-.4876	.2381	-.9599	-1.53E-02
	Equal variances not assumed			-2.403	68.083	.019	-.4876	.2030	-.8926	-8.26E-02
SailIntermediate	Equal variances assumed	19.812	.000	-3.167	102	.002	-.8536	.2695	-1.3882	-.3191
	Equal variances not assumed			-3.661	75.578	.000	-.8536	.2332	-1.3181	-.3891
SailExperienced	Equal variances assumed	19.138	.000	-3.190	102	.002	-1.1963	.3751	-1.9403	-.4524
	Equal variances not assumed			-3.708	72.684	.000	-1.1963	.3226	-1.8394	-.5533

**Table 6.22    The Average Desirable Number of Beginner, Intermediate and Experienced Sailing CAS Participants for CAS Fuel Powered Participants and Human Powered Participants**

(F = 11.387), a *t*-test for unequal variances was used. The average desirable number of beginner, intermediate and experienced sailing CAS participants is significantly higher for CAS fuel powered participants than for human powered participants.

Group Statistics					
	Powered	N	Mean	Std. Deviation	Std. Error Mean
SailBeginner	Human	43	6.977E-02	.3377	5.150E-02
	Fuel	20	.0000	.0000	.0000
SailIntermediate	Human	43	.1628	.5314	8.104E-02
	Fuel	20	.2000	.4104	9.177E-02
SailExperienced	Human	43	.2791	.6664	.1016
	Fuel	20	1.0000	1.2978	.2902

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
SailExperience	Equal variances assumed	11.387	.001	-2.923	61	.005	-.7209	.2466	-1.2141	-.2278
	Equal variances not assumed			-2.345	23.784	.028	-.7209	.3075	-1.3558	-8.60E-02

**Table 6.23    The Difference in the Average Desirable Number of Beginner, Intermediate and Experienced Sailing CAS Participants Acceptable by CAS Wind and Wave Powered Participants**

(F = 39.279 / 60.249 / 45.533), a *t*-test for unequal variances was used. The difference in the average desirable number of beginner, intermediate and experienced sailing CAS participants acceptable is significantly higher for CAS wind powered than wave powered participants.

Group Statistics					
	Powered	N	Mean	Std. Deviation	Std. Error Mean
SailBeginner	Wave	85	.0000	.0000	.0000
	Wind	61	.5574	1.5332	.1963
SailIntermediate	Wave	85	4.706E-02	.3050	3.308E-02
	Wind	61	1.0164	1.7077	.2187
SailExperienced	Wave	85	.1529	.6456	7.003E-02
	Wind	61	1.4754	2.3917	.3062

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
SailBeginner	Equal variances assumed	39.279	.000	-3.356	144	.001	-.5574	.1661	-.8856	-.2291
	Equal variances not assumed			-2.839	60.000	.006	-.5574	.1963	-.9501	-.1647
SailIntermediate	Equal variances assumed	60.429	.000	-5.127	144	.000	-.9693	.1891	-1.3430	-.5956
	Equal variances not assumed			-4.383	62.754	.000	-.9693	.2211	-1.4113	-.5274
SailExperienced	Equal variances assumed	45.533	.000	-4.863	144	.000	-1.3225	.2720	-1.8600	-.7849
	Equal variances not assumed			-4.210	66.310	.000	-1.3225	.3141	-1.9496	-.6953

**Table 6.24     The Average Desirable Number of Experienced Sailing CAS Participants Acceptable for CAS Fuel Powered Participants and Wave Powered Participants**

(F = 10.522), a *t*-test for unequal variances was used. The average desirable number of experienced sailing CAS participants acceptable is significantly higher for CAS fuel powered participants than for wave powered participants.

	Powered	N	Mean	Std. Deviation	Std. Error Mean
Sail Intermediate	Wave	85	.0471	.30495	.03308
	Fuel	20	.2000	.41039	.09177
Sail Experienced	Wave	85	.1529	.64561	.07003
	Fuel	20	1.0000	1.29777	.29019

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Sail Experienced	Equal variances assumed	21.402	.000	4.226	103	.000	-.84706	.20046	-1.24462	-.44949
	Equal variances not assumed			2.838	21.261	.010	-.84706	.29852	-1.46740	-.22672

**Table 6.25     Total Mean Tolerance Levels for CAS Sailboat Participants**

Sailboat	Human	Wave	Wind	Fuel
Beginner	0000	0000	.5574	0000
Intermediate	.1628	0000	1.0164	.2000
Experienced	.2791	.1529	1.4754	1.000

**Table 6.26    The Average Desirable Number of Beginner, Intermediate and Experienced Jet-Ski CAS Participants Acceptable by CAS Human and Fuel-Powered Participants**

(F = 26.884), a *t*-test for unequal variances was used. The average desirable number of experienced jet-ski CAS participants is significantly higher for CAS fuel powered participants than for human activities.

**Group Statistics**

Powered		N	Mean	Std. Deviation	Std. Error Mean
JetBeginner	Human	43	2.326E-02	.1525	2.326E-02
	Fuel	20	5.000E-02	.2236	5.000E-02
JetIntermediate	Human	43	6.977E-02	.3377	5.150E-02
	Fuel	20	.6000	1.2732	.2847
JetExperienced	Human	43	.2791	.7966	.1215
	Fuel	20	1.5500	1.9861	.4441

**Independent Samples Test**

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
JetExperienced	Equal variances assumed	26.884	.000	-3.638	61	.001	-1.2709	.3493	-1.9694	-.5725
	Equal variances not assumed			-2.760	21.894	.011	-1.2709	.4604	-2.2261	-.3158

**Table 6.27    The Average Desirable Number of Experienced Jet-ski CAS Participants for CAS Fuel and Wave Powered Participants**

(F = 20.631), a *t*-test for unequal variances was used. The average desirable number of experienced jet-ski CAS participants is significantly higher for CAS fuel powered participants.

**Independent Samples Test**

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
JetExperienced	Equal variances assumed	20.361	.000	-3.610	79	.001	-1.2221	.3386	-1.8960	-.5482
	Equal variances not assumed			-2.642	22.321	.015	-1.2221	.4626	-2.1808	-.2635

**Table 6.28    Total Mean Tolerance Levels for CAS Jet-ski (PWC) Participants**

PWC	Human	Wave	Wind	Fuel
Beginner	0000	0000	.1967	0000
Intermediate	0000	0000	.2623	.6000
Experienced	.2791	.4000	.3279	1.5500

**Table 6.29    Average Desirable Number of Beginner, Intermediate and Experienced Powerboat CAS Participants Acceptable by CAS Wave and Wind-Powered Participants**

(F = 39.213 / 27.192 / 46.290), a *t*-test for unequal variances was used. The average desirable number of beginner, intermediate and experienced powerboat CAS participants acceptable is significantly higher for CAS wind powered participants than for wave powered participants.

**Group Statistics**

Powered		N	Mean	Std. Deviation	Std. Error Mean
PowerBeginner	Wave	85	.0000	.0000	.0000
	Wind	61	.1148	.3696	4.732E-02
PowerIntermediate	Wave	85	3.529E-02	.2414	2.618E-02
	Wind	61	.2459	.6989	8.949E-02
PowerExperienced	Wave	85	8.235E-02	.3846	4.171E-02
	Wind	61	.4754	.9934	.1272

**Independent Samples Test**

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
PowerBeginner	Equal variances assumed	39.213	.000	-2.866	144	.005	-.1148	4.004E-02	-.1939	-3.56E-02
	Equal variances not assumed			-2.425	60.000	.018	-.1148	4.732E-02	-.2094	-2.01E-02
PowerIntermediate	Equal variances assumed	27.192	.000	-2.575	144	.011	-.2106	8.178E-02	-.3723	-4.90E-02
	Equal variances not assumed			-2.259	70.342	.027	-.2106	9.324E-02	-.3966	-2.47E-02
PowerExperienced	Equal variances assumed	46.290	.000	-3.321	144	.001	-.3931	.1184	-.6270	-.1591
	Equal variances not assumed			-2.936	72.997	.004	-.3931	.1339	-.6598	-.1263

**Table 6.30    The Average Desirable Number of Experienced Powerboat CAS Participants Acceptable for CAS Fuel Powered and Wave Powered Participants**

(F = 37.191), a *t*-test for unequal variances was used. The average desirable number of experienced powerboat CAS participants acceptable is significantly higher for CAS fuel powered participants than for wave powered participants.

**Group Statistics**

	Powered	N	Mean	Std. Deviation	Std. Error Mean
Power Intermediate	Wave	85	.0353	.24138	.02618
	Fuel	20	.2500	.55012	.12301
Power Experienced	Wave	85	.0824	.38458	.04171
	Fuel	20	1.3500	2.32322	.51949

Independent Samples Test									
		Levene's Test for Equality of Variances		t-test for Equality of Means					
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference Lower Upper
PowerExperienced	Equal variances assumed	37.191	.000	-4.828	103	.000	-1.2676	.2626	-1.7884 -.7469
	Equal variances not assumed			-2.432	19.246	.025	-1.2676	.5212	-2.3575 -.1778

**Table 6.31    The Average Desirable Number of Beginner Powerboat CAS Participants for CAS Wind Powered and Wave-Powered Participants**

(F = 9.124), and *t*-test for unequal variances was used. The average desirable number of beginner powerboat CAS participants is significantly higher for CAS wind powered participants than for wave-powered participants.

Group Statistics					
	Powered	N	Mean	Std. Deviation	Std. Error Mean
PowerBeginner	Wind	61	.1148	.3696	4.732E-02
	Fuel	20	.0000	.0000	.0000
PowerIntermediate	Wind	61	.2459	.6989	8.949E-02
	Fuel	20	.2500	.5501	.1230
PowerExperienced	Wind	61	.4754	.9934	.1272
	Fuel	20	1.3500	2.3232	.5195

Independent Samples Test									
		Levene's Test for Equality of Variances		t-test for Equality of Means					
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference Lower Upper
PowerBeginner	Equal variances assumed	9.124	.003	1.383	79	.171	.1148	8.300E-02	-5.04E-02 .2800
	Equal variances not assumed			2.425	60.000	.018	.1148	4.732E-02	2.009E-02 .2094

**Table 6.32    Total Mean Tolerance Levels for CAS Powerboat Participants**

Powerboat	Human	Wave	Wind	Fuel
Beginner	0000	0000	.1148	0000
Intermediate	0000	0000	.2459	.2500
Experienced	.2093	0000	.4754	1.3500

**Table 6.33 The Average Desirable Number of Beginner, Intermediate and Experienced Sub-Aqua CAS Participants Acceptable to CAS Human and Wave Powered Participants**

( $F = 13.254 / 13.751$ ), a  $t$ -test for unequal variances was used. The average desirable number of beginner and intermediate sub-aqua CAS participants is significantly higher for CAS human powered participants than for wave powered participants.

	Powered	N	Mean	Std. Deviation	Std. Error Mean
Sub Aqua Intermediate	Human	43	3.2558	4.60379	.70207
	Wave	85	.9647	3.63333	.39409
Sub Aqua Beginner	Human	43	2.0000	3.29502	.50249
	Wave	85	.5176	2.47180	.26810

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Sub Aqua Intermediate	Equal variances assumed	13.751	.000	3.074	126	.003	2.29111	.74540	.81598	3.76624
	Equal variances not assumed			2.846	69.202	.006	2.29111	.80512	.68503	3.89719
Sub Aqua Beginner	Equal variances assumed	13.254	.000	2.856	126	.005	1.48235	.51902	.45522	2.50949
	Equal variances not assumed			2.603	66.618	.011	1.48235	.56954	.34543	2.61927

**Table 6.34 The Average Desirable Number of Beginner, Intermediate and Experienced Sub-Aqua CAS Participants Acceptable to CAS Human Powered Participants and Wind Powered Participants**

( $F = 45.319 / 74.394 / 27.067$ ), a  $t$ -test for unequal variances was used. The average desirable number of beginner, intermediate and experienced sub-aqua CAS participants is significantly higher for CAS human powered participants than for wind powered participants.

**Group Statistics**

	Powered	N	Mean	Std. Deviation	Std. Error Mean
Sub Intermediate	Human	43	3.2558	4.60379	.70207
	Wind	61	.3279	.96127	.12308
Sub Beginner	Human	43	2.0000	3.29502	.50249
	Wind	61	.2459	.90656	.11607
Sub Experienced	Human	43	5.3721	8.53012	1.30083
	Wind	61	.4426	1.14782	.14696

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Sub Intermediate	Equal variances assumed	74.394	.000	4.829	102	.000	2.92795	.60629	1.72538	4.13051
	Equal variances not assumed			4.108	44.592	.000	2.92795	.71278	1.49197	4.36392
Sub Beginner	Equal variances assumed	45.319	.000	3.958	102	.000	1.75410	.44320	.87502	2.63318
	Equal variances not assumed			3.401	46.509	.001	1.75410	.51572	.71632	2.79188
Sub Experienced	Equal variances assumed	27.067	.000	4.465	102	.000	4.92947	1.10393	2.73982	7.11912
	Equal variances not assumed			3.766	43.074	.000	4.92947	1.30911	2.28954	7.56940

**Table 6.35 The Average Desirable Number of Beginner, Intermediate and Experienced Sub-Aqua CAS Participant for CAS Human Powered Participants and Fuel - Powered Participants**

( $F = 25.990 / 35.451 / 5.781$ ), a  $t$ -test for unequal variances was used. The average desirable number of beginner, intermediate and experienced sub-aqua CAS participant is significantly higher for CAS human powered participants than for fuel powered participants.

	Powered	N	Mean	Std. Deviation	Std. Error Mean
Sub Intermediate	Human	43	3.2558	4.60379	.70207
	Fuel	20	.0500	.22361	.05000
Sub Beginner	Human	43	2.0000	3.29502	.50249
	Fuel	20	.0000	.00000	.00000
Sub Experienced	Human	43	5.3721	8.53012	1.30083
	Fuel	20	.9500	2.78104	.62186



Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Sub Intermediate	Equal variances assumed	35.451	.000	3.099	61	.003	3.20581	1.03449	1.13721	5.27441
	Equal variances not assumed			4.555	42.425	.000	3.20581	.70385	1.78581	4.62582
Sub Beginner	Equal variances assumed	25.990	.000	2.703	61	.009	2.00000	.74001	.52026	3.47974
	Equal variances not assumed			3.980	42.000	.000	2.00000	.50249	.98594	3.01406
Sub Experienced	Equal variances assumed	5.781	.019	2.255	61	.028	4.42209	1.96126	.50032	8.34387
	Equal variances not assumed			3.067	56.829	.003	4.42209	1.44183	1.53469	7.30950

**Table 6.36     The Average Desirable Number of Beginner, Intermediate and Experienced Sub-Aqua CAS Participants Acceptable to CAS Wind and Fuel Powered Participants**

(F = 6.270 / 6.895), a *t*-test for unequal variances was used. The average desirable number of beginner, intermediate and experienced sub-aqua CAS participants acceptable is significantly higher for CAS human powered participants than for wind and fuel powered participants.

	Powered	N	Mean	Std. Deviation	Std. Error Mean
Sub Intermediate	Wind	61	.3279	.96127	.12308
	Fuel	20	.0500	.22361	.05000
Sub Beginner	Wind	61	.2459	.90656	.11607
	Fuel	20	.0000	.00000	.00000
Sub Experienced	Wind	61	.4426	1.14782	.14696
	Fuel	20	.9500	2.78104	.62186

**Independent Samples Test**

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Sub Intermediate	Equal variances assumed	6.895	.010	1.276	79	.206	.27787	.21770	-.15545	.71119
	Equal variances not assumed			2.092	74.989	.040	.27787	.13285	.01322	.54251
Sub Beginner	Equal variances assumed	6.270	.014	1.208	79	.231	.24590	.20357	-.15930	.65111
	Equal variances not assumed			2.118	60.000	.038	.24590	.11607	.01372	.47808
Sub Experienced	Equal variances assumed	5.085	.027	1.164	79	.248	-.50738	.43582	-1.37485	.36009
	Equal variances not assumed			-.794	21.161	.436	-.50738	.63899	-1.83562	.82086

**Table 6.37     Total Mean Tolerance Levels for CAS Sub-Aqua Participants**

<i>Sub-Aqua</i>	Human	Wave	Wind	Fuel
Beginner	2.000	.5176	.2459	.0000
Intermediate	3.255	.9647	.2459	.2500
Experienced	5.372	2.9294	.4754	.9500

**Table 6.38     The Average Desirable Number of Beginner, Intermediate and Experienced Angler CAS Participants Acceptable to CAS Human and Wave Powered Participants**

( $F = 20.408 / 15.227$ ), a *t*-test for unequal variances was used. The average desirable number of intermediate and experienced angler CAS participants is significantly higher for CAS human powered participants than for wave-powered participants.

**Group Statistics**

Powered		N	Mean	Std. Deviation	Std. Error Mean
AnglerBeginner	Human	43	.9070	3.2206	.4911
	Wave	85	.1765	1.6270	.1765
AnglerIntermediate	Human	43	2.0000	4.6496	.7091
	Wave	85	.2941	2.7116	.2941
AnglerExperienced	Human	43	2.9535	5.3938	.8225
	Wave	85	.5412	3.8407	.4166

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
AnglerIntermediate	Equal variances assumed	20.408	.000	2.620	126	.010	1.7059	.6512	.4172	2.9946
	Equal variances not assumed			2.222	56.855	.030	1.7059	.7676	.1686	3.2431
AnglerExperienced	Equal variances assumed	15.227	.000	2.917	126	.004	2.4123	.8271	.7756	4.0490
	Equal variances not assumed			2.616	64.198	.011	2.4123	.9220	.5705	4.2542

**Table 6.39     The Average Desirable Number of Beginner, Intermediate and Experienced Angler CAS Participants Acceptable to CAS Human and Wind Powered Participants**

(F = 21.159 / 28.348), a *t*-test for unequal variances was used. The desirable number of intermediate and experienced angler CAS participants acceptable is significantly higher by CAS human powered than for wind powered participants.

**Group Statistics**

	Powered	N	Mean	Std. Deviation	Std. Error Mean
AnglerBeginner	Human	43	.9070	3.2206	.4911
	Wind	61	.4754	1.4788	.1893
AnglerIntermediate	Human	43	2.0000	4.6496	.7091
	Wind	61	.5082	1.4902	.1908
AnglerExperienced	Human	43	2.9535	5.3938	.8225
	Wind	61	.6230	1.5293	.1958

**Independent Samples Test**

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
AnglerIntermediate	Equal variances assumed	21.159	.000	2.345	102	.021	1.4918	.6362	.2299	2.7537
	Equal variances not assumed			2.032	48.126	.048	1.4918	.7343	1.552E-02	2.9681
AnglerExperienced	Equal variances assumed	28.348	.000	3.203	102	.002	2.3305	.7277	.8872	3.7739
	Equal variances not assumed			2.756	48.790	.008	2.3305	.8455	.6293	4.0317

**Table 6.40    The Average Desirable Number of Intermediate Angler CAS Participants for CAS Human Powered Participants and Fuel Powered Participants**

(F = 11.108), a *t*-test for unequal variances was used. The average desirable number of intermediate angler CAS participants is significantly higher for CAS human powered participants than for fuel powered participants.

Group Statistics					
	Powered	N	Mean	Std. Deviation	Std. Error Mean
AnglerBeginner	Human	43	.9070	3.2206	.4911
	Fuel	20	.2500	.9105	.2036
AnglerIntermediate	Human	43	2.0000	4.6496	.7091
	Fuel	20	.2500	.9105	.2036
AnglerExperienced	Human	43	2.9535	5.3938	.8225
	Fuel	20	1.7000	3.4504	.7715

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
AnglerIntermediate	Equal variances assumed	11.108	.001	1.662	61	.102	1.7500	1.0533	-.3561	3.8561
	Equal variances not assumed			2.372	48.482	.022	1.7500	.7377	.2671	3.2329

**Table 6.41    Total Mean Tolerance Levels for CAS Sea-Angler Participants**

<i>Sea-Angler</i>	Human	Wave	Wind	Fuel
Beginner	.9070	.1765	.4754	.2500
Intermediate	2.000	.2941	.5082	.2500
Experienced	2.9535	.5412	.6230	1.700

**Table 6.62    Total Mean Tolerance Levels for CAS Canoe Participants**

<i>Canoe</i>	Human	Wave	Wind	Fuel
Beginner	.6744	.3529	.5902	.2000
Intermediate	1.000	.7059	1.2295	.7500
Experienced	1.2791	1.0941	1.7377	2.000